DOCUMENT RESUME

ED 164 887 08 CE 019 107

AUTHOR Woelfer, Carlyle
TITLE The Articulation of Occupational Education Programs between Secondary Schools and Community Colleges/Technical Institutes Project, 1 September 1974-31 Jul 1978. Final Report.
INSTITUTION North Carolina State Dept. of Community Colleges, Raleigh. Office of Program Improvement.; North Carolina State Dept. of Public Instruction, Raleigh. Occupational Research Unit.
SPONS AGENCY Bureau of Occupational and Adult Education (DHEW/OE), Washington, D.C.
PUB DATE Jul 78
NOTE 87p.; For related documents see CE 019 108-111

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.
DESCRIPTORS Administrative Policy; *Articulation (Program); Auto Mechanics (Occupation); Business Education; College School Cooperation; Community Colleges; Cooperative Planning; Course Objectives; Curriculum Guides; Drafting; Models; *Postsecondary Education; Program Coordination; *Secondary Education; State Departments of Education; State Programs; Task Analysis; Technical Institutes; *Vocational Education
IDENTIFIERS *North Carolina; North Carolina (Duplin County)

ABSTRACT

The purpose of this project was to develop a comprehensive model plan for the articulation of public high school vocational education programs with the occupational education programs of the community colleges/technical institutes in Duplin County, North Carolina. Such a plan would serve also as a guide for articulation efforts throughout the state. Project procedures were divided into two phases. Phase I included the orientation and preparation of project participants relative to articulation concepts; the finalizing of a plan of action; the development of policies and procedures; the organization of local area joint advisory and program committees that would be used in the development of the materials; the development of job task inventories and state pilot model instruction objectives guides; application of articulation procedures; and the development of an articulation policies and procedures guide. During phase II a set of three "State Pilot Model" instructional objective guides were developed in automotive mechanics, executive secretary/business education, and drafting. A "State Pilot Model" articulation policies and procedures guide was also developed. For those programs commonly taught by numerous institutions throughout the state, it was concluded that a better quality articulated vocational/occupational education program can be developed with less cost and effort by a joint state occupational advisory and program committee than can be done at the local level. (Also available are a Policies and Procedures Guide [CE 019 108] and Instructional Objectives Guides [CE 019 109-111].) (JH)

ED164887

THE FINAL REPORT

OF

THE ARTICULATION OF OCCUPATIONAL EDUCATION PROGRAMS BETWEEN SECONDARY SCHOOLS AND COMMUNITY COLLEGES/TECHNICAL INSTITUTES PROJECT

1 SEPTEMBER 1974-31 JULY 1978

JULY 1978

DR. CARLYLE P. WOELFER

PROJECT DIRECTOR

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CE 019 107

A JOINT RESEARCH PROJECT SPONSORED BY
THE NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION
AND
THE NORTH CAROLINA DEPARTMENT OF COMMUNITY COLLEGES

PREFACE

North Carolina has a strong commitment to provide vocational and occupational education for its citizens. This is best exemplified by the many comprehensive high schools and the 57 community colleges and technical institutes strategically located in all parts of the State. In an effort to improve the opportunities for the graduates of high school vocational programs, articulation became a matter of official policy on 4 March 1971 when the State Board of Education issued its announcement favoring articulation.

Recognizing the benefits of and the need for comprehensive action to achieve articulation, a group of forward-looking educators in Duplin County, North Carolina took action on 3 May 1974 to obtain authority to conduct a research project with articulation objectives. Dominant in the objectives was the proposal "to develop a comprehensive model plan for the articulation of high school occupational education programs with those of the community college/technical institute which can serve as a guide for articulation efforts throughout the state." Initiators of the project were Mr. Thomas Hall, then the Assistant Dean of Instruction, James Sprunt Technical Institute; Mr. Lloyd Stevens, Assistant Superintendent for Vocational Education, Duplin County Schools; Mr. Charles H. Yelverton, Superintendent, Duplin County Schools; Mr. Dixon S. Hall, then President, James Sprunt Technical Institute; and Dr. Carl D. Price, then Dean of Instruction, James Sprunt Technical Institute.

Equally important to initiating and sustaining the project were Mr. Fred Manley, Director of Program Improvement, Department of Community Colleges, who has coordinated the project for that Department; Dr. Jesse Clemmons, Assistant Director, Occupational Research Unit, State Department of Public Instruction, who coordinated the project for that Department; and Dr. Charles Rogers, Director, Occupational Research Unit, State Department of Public Instruction. Without the support, encouragement and active assistance of those mentioned, this project could not have reached fruition. Many others have contributed their expertise and support. Chief among these were Dr. Durwin M. Hanson and Dr. Farmer S. Smith, Department of Occupational Education, North Carolina State University, Raleigh; and Dr. E. Michael Latta, Executive Director, North Carolina State Advisory Council on Vocational Education.

Little could have been accomplished without the many educational administrators and vocational/occupational supervisors from across the State who were interested and willing to enter into local area articulation agreements to try the policies and procedures developed. It was they and their occupational education instructors and vocational education teachers whose participation and contributions have shown that articulation is desirable and can be made to work, if the policies and procedures that have been developed are applied. The project has produced the "how" for the articulation of vocational and occupational education programs in North Carolina because they were involved.

It is readily obvious that this project was an articulated, joint effort in its own right. The policies and procedures which have evolved can benefit the students of the State, the educational programs concerned and the communities which support the educational institutions. This project has also attracted considerable national recognition and interest, an indication that our collective efforts show much promise. A way to articulation has been shown, it is now incumbent upon all concerned to take advantage of the accomplishments to-date by actively applying and improving upon the project results. Such action will justify the time, effort and resources expended.

Carlyle P. Woelfel, Ed.D.
Project Director

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NORTH CAROLINA
ARTICULATION RESEARCH PROJECT
FINAL REPORT

SUMMARY OF REPORT

A. Time Covered By Report

The project was officially started 1 September 1974 and concluded on 31 July 1978. It consisted of two phases--Phase I: 1 September 1974 to 31 July 1976 and Phase II: 1 August 1976 to 31 July 1978.

B. Project Objectives

1. Phase I: 1 September 1974 to 31 July 1976

   This project was initiated as a joint effort of James Sprunt Technical Institute, Kenansville, NC, a unit of the North Carolina System of Technical Institutes and Community Colleges, and the Duplin County Public Schools.

   The objectives of the project were:

   a. To improve coordination of occupational education programs between the public schools and technical institutes;

   b. To develop proficiency tests for selected common curricula and to place entering students according to their achievement levels; and

   c. To develop a comprehensive model plan for the articulation of high school occupational education programs with those of the community college/technical institute which can serve as a guide for articulation efforts throughout the State.

   The initial project, approved for 18 months duration, was followed by a 5-month extension to 23 months to cover 2 full school years. This project was coordinated and funded jointly by the Occupational Research Unit of the Department of Public Instruction and the Office of Program Improvement of the Department of Community Colleges. The 1974-76 project results showed such promise that the project was extended for 2 years, starting 1 August 1976.

2. Phase II: 1 August 1976 to 31 July 1978

   The 1976-78 Phase of the project had as its objectives:

   a. To revise and validate the administrative and curriculum policies and procedures to be established by the community college/

technical institute in order to enroll and continue the instruction in the most appropriate and efficient manner of high school students taught in an articulated curriculum;

b. To pilot test and revise the developed Curriculum Articulation Model in Occupational Education;

c. To provide consultative assistance on a limited basis to the local educational agencies requesting such relative to articulation concepts and procedures; and

d. To corroborate in the current efforts in curriculum design and program standards by the State Department of Public Instruction and the State Department of Community Colleges.

C. Procedures Followed

1. Phase I (1974-76)

The first two years of the project was divided into two periods -

a. Part 1, Phase I (1 September 1974 to 30 June 1975).--The first part of this period was used to orient project participants on articulation concepts to be adopted and finalize a plan of action; develop policies and procedures to be employed; and organize local area joint advisory and program committees that would be used in the development of the material to be used in the articulation of vocational/occupational education program subject matter.

1) Articulation Concepts -

The articulation concepts contain requirements for action in five basic areas if articulation is to be achieved. The concepts are stated here in abbreviated form only. Articulation requires the following actions:

a) Joint-level issuance of policies and procedures, cooperation among all participants and support by administrators at all levels of education;

b) Standardization of occupational education curriculum content, based upon employer requirements for job qualification;

c) Establishment of standardized performance standards for the same job task, based upon employer requirements;

d) Designation of one joint advisory/program development committee for each articulated program to serve all schools in the program in the local area, with a like committee for the state level; and

e. Establishment of a standard evaluation system to determine individual ability to meet task performance standards prior to recognizing job qualification or awarding post-secondary credits toward advanced occupational instruction.

The articulation concepts adopted had been developed and validated for acceptability in an independent statewide study conducted in the period 1973-76 by Dr. Carlyle P. Woelfer, titled "A Study of Concepts, Policies and Procedures to Accomplish Vocational-Technical Education Program Articulation Between Secondary Schools and Institutions of the Community College System of North Carolina," North Carolina State University, published in 1977.

2) Articulation Policies and Procedures Survey -

The policies and procedures proposed for employment in the project were tested for suitability and acceptance by a survey which was conducted among all participants in the project. The survey items implemented and were based upon the articulation concepts adopted. The articulation policies and procedures employed in the project were based primarily upon the results of the survey.

3) Organization of Duplin Area Occupational Advisory and Program Committees -

Duplin Area joint occupational advisory and program committees were organized for the Automotive, Business Education and Drafting Programs. Such committees are the keys to articulation of vocational/occupational common course content and instructional objectives. The committees included all Duplin County high school vocational education teachers and James Sprunt Technical Institute occupational education instructors whose programs were involved in the articulation project. Occupational (craft) advisors nominated by the teachers/instructors of the committees were also committee members as was a vocational/occupational education supervisor from either Duplin County or James Sprunt Technical Institute. This individual became the executive secretary of the committee. Each advisory and program committee had the function of providing advisory and program development/review services for all schools conducting the program. Initial overall supervision of project activity and approval of policies and procedures proposed for implementation was exercised by a joint committee of supervisors and administrators from the Duplin County Schools and James Sprunt Technical Institute.

b. Second Period, Part 1, Phase I.--This period of Part 1, Phase I of the project involved two major actions:

1) Development of job-task inventories for each of the vocational/occupational education programs to be articulated. A job analysis survey for a specific occupation was sent to each advisor for that occupation. The full advisory and program committee for each program then met to develop master task inventories grouped in duty areas (based upon the survey responses) that were acceptable to the majority of the program advisors. These task inventories contained the listing of job tasks which a worker must be capable of performing to be job qualified.

2) Development of Instructional Objectives Guides -

The high school vocational education teachers and the technical institute occupational education instructors on each committee took action to develop a joint, common, standardized instructional guide reference, for use by the teachers and instructors for each program based upon the occupation's task inventory. The instructional pages of these guides were developed by designating each job task recognized as an instructional objective and then performing a simple task analysis to determine what cognitive and/or applicatory skills the worker must have and what technical information must be learned to become job qualified to perform the task. Task performance standards based upon employer requirements and test items for task performance evaluation were also developed during this time. This document is the guide to providing the same instructional content for common courses of vocational/occupational instruction.

c. Part 2, Phase I (1 July 1975 to 31 July 1976) -

1) Application of Standardized Subject Matter and Testing Procedures -

This part of Phase I saw application of the instructional objectives guides developed during 1974-75. During May of 1976, centralized testing of a selected sample of high school students from each high school and each vocational program in the articulation project was conducted. The purpose was to determine individual student ability to meet job-task performance standards. Several post-secondary students also participated. The students were all evaluated at James Sprunt Technical Institute by joint test teams of vocational teachers and occupational instructors who prepared the test items taken from the instructional guides and administered the tests. The procedure was considered as successful.

2) Development of Duplin Area Articulation Policies and Procedures Guide -

Project objectives included a requirement for an articulation model. Based upon articulation concepts adopted,

policies and procedures implemented and experiences gained during the period, development of an Articulation Policies and Procedures Guide was initiated in early 1976. The draft guide was developed by the Project Director and then reviewed for comment by Duplin Area administrators and supervisors from the secondary and post-secondary levels of education, plus certain State staff personnel participating in the project. The purpose of this procedural policy was to ensure that those who would be expected to use the guide had an opportunity to contribute to its development.

2. Phase II (1 August 1976 to 31 July 1978)

a. Expansion of Articulation Activity.--During this Phase of the project, other North Carolina public secondary school systems and the local community colleges/technical institutes (CC/TI) who had shown interest in articulation and a desire to enter into articulation agreements were given technical assistance to initiate articulation action. Assistance was primarily joint articulation orientations presented by the Project Director for administrators, staffs and faculties from both levels of education, usually at the local area post-secondary institution and provision of guides developed to-date. Initially, this involved 7 CC/TI and 10 county or city school systems.

b. Development of State Pilot Model Instructional Objectives Guides.--As part of the requirement to develop "State Pilot Models" for the articulation of vocational/occupational education programs, representatives of automotive, business education and drafting teachers/instructors from the high schools and CC/TI involved in the articulation action met in Raleigh together with advisors from their areas to develop "State Pilot Model" instructional objectives guides for their programs. The guides developed originally in Duplin County were the bases. State level occupational program development and vocational education consultant staff personnel participated in this effort. The rationale for this procedure was to involve persons from all areas participating in articulation in developing a statewide guide on the premise that such involvement would result in a more valid guide as well as a document with which all could identify that would be applicable statewide. State curriculum staff personnel from both the Department of Public Instruction and Department of Community Colleges have been fully oriented on the articulation concepts, policies and procedures.

The drafting teachers/instructors and advisors from areas involved in articulation agreements met on 18 July 1978 at Fayetteville Technical Institute to review and discuss the content of draft copies of the proposed articulated specialty drafting programs and courses. Input has also been provided by architectural drafting instructors from Pitt and Forsyth Technical Institutes. Part I - Basic Drafting Guide, developed in 1977, provides instructional content upon which the advanced portion of the program is based.

c. Development of State Pilot Model Policies and Procedures Guide.--A "State Pilot Model" Articulation Policies and Procedures Guide was developed by June 1978. This document was also based upon the Duplin Area developed guide. It had draft review input from all levels of vocational/occupational educators, guidance counselors, administrators at the local area level, and State staff personnel from both the Department of Public Instruction and Department of Community Colleges. The purpose of this procedure was to develop a guide acceptable and applicable to most areas of the State.

d. Application of Centralized Testing Procedures.--In May 1977, the Duplin Area schools conducted centralized testing in three articulated programs involving over 140 high school students from four high schools. The testing of the drafting students involved Sampson Technical Institute from an adjacent county since James Sprunt Technical Institute dropped the Drafting Program. The Duplin County Schools signed an articulation agreement with Sampson Technical Institute for their Drafting Program in 1976.

D. Results and Accomplishments

A curriculum that is successfully articulated (vertically) allows a student to proceed smoothly through educational experiences at the lowest possible cost to the student in terms of time, energy, and/or money spent in achieving his/her occupational goal. Horizontal articulation enhances transfer from one institution to another in the same program.

1. Phase I (1974-76)

a. Cooperation and Coordination Developments.--During this period relationships and organizations were developed in Duplin County that contributed to communication and cooperation between the administrators, supervisors, guidance counselors and vocational/occupational education teachers/instructors of the Duplin County Schools and James Sprunt Technical Institute. Communication and cooperation are essential elements of the articulation process. A procedure for evaluation of student competencies required for job qualification and (for the high school student) concurrent awarding of credits toward advanced placement in the same articulated occupational program was also developed.

b. Softwares Developed

1) Instructional Objectives Guides -

A set of five instructional objectives guides in automotive mechanics, executive secretary and stenographer/business education, drafting, business administration and accounting was developed. They contain the following:

a) minimum tasks that a worker is expected to perform in the conduct of a specific job,

b) primary instructional objectives which are based upon the tasks,

c) skills and related technical information necessary to accomplish the instructional objectives,

d) instructional contact hours recommended for the conduct of instruction,

e) performance standards for occupational proficiency in the tasks,

f) guide to the conduct of sequential occupational competency instruction,

g) equipment required to conduct the program of instruction, and

h) performance test items used in the determination of occupational proficiency.

2) Articulation Policies and Procedures Guide -

This was the initial model plan for the articulation of occupational education curricula between high schools and CC/TI which was to be applicable in Duplin County, but was written with wider use in mind. This guide stated the articulation concepts, their rationale, details the policies and procedures required for implementation and provides examples of implementing documents. (The concepts were discussed earlier in this summary.)

2. Phase II (1976-78)

During this period, a set of three "State Pilot Model" instructional objectives guides were developed in Automotive Mechanics, Executive Secretary/Business Education and Drafting (Basic, Architectural and Mechanical). A "State Pilot Model" Articulation Policies and Procedures Guide was also developed. Conceptually, these documents have the same basic contents as those prepared in the 1974-76 Phase. With the added two years of experience and the expertise of many more highly qualified contributors and articulation participants, the Duplin Area guides have been upgraded, expanded and refined in content to reflect statewide occupational advisor input and occupational educator needs at all levels. The "State Pilot Models" are applicable to the average vocational/occupational education articulation situation anywhere in the State.

3. Discussion of Results and Accomplishments

a. Policies and Procedures.--The articulation policies and procedures (where applied) appear to be workable, reasonable in cost and efficient in time required to complete the procedure. Three programs of instruction with vocational/occupational courses having the same instructional objectives now have a guide to achieve the same instructional content and apply the same performance standards in such courses. Communication procedures between the high schools and CC/TI in their area have been developed and are now practiced to varying degrees at administrator, supervisor and teacher/instructor levels. A way has been developed by which students can move smoothly, without delay, from the secondary to the post-secondary occupational program level and receive credit for high school vocational course work in which certified as job qualified. Where procedures are fully implemented, articulation can result in the development of a cooperative team effort and instructional content improvement in the delivery of vocational/occupational education at both the local area and State levels.

b. Impact of Articulation.--Individual students have been awarded as much as 40 credit hours by James Sprunt Technical Institute for vocational work completed in high school. These students have maintained above average performance in their program during their first year at the post-secondary level. Articulation of vocational/occupational education programs is not a complex procedure, once its concepts are accepted and the participants practice the requirements for cooperation, coordination and communication with each other. The results benefit the student, the program, the institutions involved and the community.

c. Application of Articulation Guides.--The Articulation Policies and Procedures Guide provides sufficient detail and specifics to guide articulation efforts in any area of the State for any program. The articulated instructional objectives guides produced for the three programs concerned provide a common reference to help ensure that instructional content, performance standards applied and evaluation procedures are standardized for common courses at the secondary and post-secondary levels of occupational education.

d. Articulation Participation.--This project has received national as well as State acclaim and is the subject of growing interest both within the State and other states who have heard of the project. Eight CC/TI and 11 school systems in North Carolina had formal articulation agreements at project termination, with others working toward that end.

E. Conclusions and Recommendations

Procedures for vertical and horizontal articulation of vocational/occupational education programs in North Carolina have been identified and developed. These procedures have been or are being implemented in several areas of the State. Recommendations are directed toward:

1. Continued efforts to improve upon interest, cooperation, coordination, support and practice of articulation to achieve a team effort between vocational/occupational staff personnel of both the Department of Public Instruction and Department of Community Colleges;

2. Local area vocational/occupational education supervisors taking steps to conduct joint workshops to ensure that teachers and instructors understand fully articulation policies and procedures, how to use the instructional objectives guides for their program and develop an articulation activities schedule to be followed by all concerned;

3. Continued and greater efforts at the local CC/TI and secondary school system level vocational/occupational education supervisor level to follow-up on agreements implemented to encourage all occupational education teachers and instructors in articulated programs to use instructional objectives guides adopted and to work with each other to achieve articulation instead of ignoring the guides and obstructing articulation efforts;

4. Recognition of the fact that failure of educators to cooperate, coordinate and articulate their vocational/occupational education programs works primarily to the disadvantage of the students, degrades the image of the institutions concerned and is an obstacle to program improvement; and

5. Action by the curriculum/program development staff personnel of both the Department of Public Instruction and Department of Community Colleges to use the same occupational advisory committee to jointly develop and use the same occupational task inventory, instructional objectives and instructional guides for common courses of vocational/occupational education programs.

NORTH CAROLINA
ARTICULATION RESEARCH PROJECT
FINAL REPORT

CHAPTER I - THE ARTICULATION PROJECT

A. BACKGROUND

Articulation of vocational/occupational education programs between high schools and community colleges/technical institutes (CC/TI) has been the subject of discussion in educational circles for many years. In more recent times, the subject has become the object of nationwide concern as well as positive effort. Governmental agencies at both the Federal and State levels are on record as advocating the need for articulation of such programs.

On 4 March 1971, the North Carolina State Board of Education issued its policy supporting articulation. That policy was incorporated into the North Carolina Administrative Code on 5 January 1978 under Title 16, Department of Public Education, Chapter 4 - Community College System: Subchapter 4E - Educational Programs, Public Schools and Community College Systems; Paragraph .0501 of Section .0500 - Articulation. The North Carolina State Advisory Council on Vocational Education has added its support to such action. Further official support for articulation in North Carolina is to be found in Paragraph 2, Page 7 of the pamphlet titled "Statements of Philosophy for The North Carolina Community College System," issued by the State Board of Education, Raleigh, NC, October 1977.

B. DEFINITION OF ARTICULATION

To provide a common basis for understanding and for the purposes of this document, articulation of vocational/occupational education programs is defined as the action resulting from policies and procedures employed to provide for:

1. Vocational/occupational program alignment and continuity in a given occupational area between high schools and CC/TI conducting the program;

2. Skills and related technical information required by the student to achieve smooth transition through the various levels of educational experience in that program;

3. Transition of the student from one educational level to another in a given occupational area without unnecessary administrative delay or duplication of effort; and

4. Improved communication and cooperation between institutions, school systems and communities at both local area and state levels, that share interest in the same occupational program(s).

The above definition is recognized by many educators interested in occupational education nationwide.

The "Open Door" Admissions Policy and Articulation - The North Carolina Public Technical Institutes and Community Colleges System must by law practice the "Open Door" policy of admissions. This policy results in the instruction for vocational/occupational education programs being conducted by those institutions starting at the beginner's level. As a result, many vocational/technical courses have instructional content common to those of the vocational courses conducted in the comprehensive high schools of the North Carolina System of Public Elementary and Secondary Schools. For this reason, it is essential that articulation be practiced in North Carolina.

C. INTRODUCTION

1. The Articulation Project: The North Carolina State Board of Education approved the initiation of a Department of Community Colleges research and development project which started on 1 September 1974, entitled "Articulation of Occupational Education Programs Between Secondary Schools and Community Colleges/Technical Institutes." The agencies initially cooperating to conduct this project were Duplin County Public Schools and James Sprunt Technical Institute of Kenansville - an articulated effort itself. This project was coordinated by the North Carolina Occupational Research Unit.

   The purpose of this project was to develop a comprehensive model plan for the articulation of public high school vocational education programs with the occupational education programs of the CC/TI which could serve as a guide for articulation efforts throughout the State.

2. Time Covered By Report: The project was officially started 1 September 1974 and concluded on 31 July 1978. It consisted of two Phases in the time frame indicated: Phase I - 1 September 1974-31 July 1976; Phase II - 1 August 1976-31 July 1978.

D. PROJECT OBJECTIVES

1. The Objectives of Phase I (1974-76) of the Project Were:

   a. To improve coordination of occupational education programs between the public schools and technical institutes;

   b. To develop proficiency tests for selected common curricula and to place entering students according to their achievement levels; and

   c. To develop a comprehensive model plan for the articulation of high school occupational education programs with those of the community college/technical institute which can serve as a guide for articulation efforts throughout the State.

2. Project Extensions: Initially, the project was approved for 18 months. It was followed by a 5-month extension to 23 months to cover 2 full school years. The budget for the 23-month period was $47,200. This portion of the project was coordinated and funded through the North Carolina Occupational Research Unit. The 1974-76 project results showed such promise that the project was extended for 2 years, starting 1 August 1976. The North Carolina Occupational Research Unit coordinated the project until late 1977 when it was joined by the newly established Office of Program Improvement, Department of Community Colleges. The funding for this second phase of the project was provided in equal amounts by both the Department of Public Instruction and the Department of Community Colleges for a total of $60,000. There was also a carryover of unspent funds from the 1974-76 budget of approximately $5,600 that brought the funding for the period to $65,600.

3. Project Objectives, Phase II (1976-78)

The 1976-78 Phase of the project had as its objectives:

a. To revise and validate the administrative and curriculum policies and procedures to be established by the community college/technical institute in order to enroll and continue the instruction in the most appropriate and efficient manner of high school students taught in an articulated curriculum;

b. To pilot test and revise the developed Curriculum Articulation Model in Occupational Education;

c. To provide consultative assistance on a limited basis to the local educational agencies requesting such relative to articulation concepts and procedures; and

d. To corroborate in the current efforts in curriculum design and program standards by the State Department of Public Instruction and the State Department of Community Colleges.

E. CHARACTERISTICS OF ARTICULATED VOCATIONAL/OCCUPATIONAL PROGRAMS

Articulated vocational/occupational education programs are by nature competency based instructional programs and should be sequential competency organized and be competency based evaluated. This characteristic is brought about by the fact that instructional objectives for the most part are directed toward acquisition of the competencies required to perform job qualification tasks and that task performance evaluation requires performance that meets initial employment job-task performance standards.

CHAPTER II - PROJECT PROCEDURES

A. PHASE I (1974-76)

The first two years of the project were divided into two periods -

1. 1 September 1974-30 June 1975 Actions

   a. Part 1 - Orientation and Preparation.--The first part of this period was used to orient project participants on articulation concepts to be adopted and finalize a plan of action; develop policies and procedures to be employed; and organize local area joint advisory and program committees that would be used in the development of the material to be used in the articulation of vocational/occupational education program subject matter. The articulation concepts adopted had been developed and validated for acceptability in an independent statewide study conducted in the period 1973-76 by Dr. Carlyle P. Woelfer titled "A Study of Concepts, Policies and Procedures to Accomplish Vocational-Technical Education Program Articulation Between Secondary Schools and Institutes of The Community College System of North Carolina," North Carolina State University, published in 1977. (See Appendix A for Articulation Concepts and Rationale.) The policies and procedures proposed for employment in the project were tested for suitability and acceptance by a survey which was conducted among all participants in the project. The survey reached all levels of participants including the President of James Sprunt Technical Institute and the Superintendent of the Duplin County Schools. The survey items implemented and were based upon the articulation concepts adopted. The articulation policies and procedures employed in the project were based primarily upon the results of the survey. (See Appendix C for Survey Sample.)

   b. Arciculation Concepts (Abbreviated).--The articulation concepts contain requirements for action in five basic areas if articulation is to be achieved. The concepts are stated in abbreviated form below. Articulation requires:

      1) Joint-level issuance of policies and procedures, cooperation among all participants and support by administrators at all levels of education;

      2) Standardization of occupational education curriculum content based upon employer requirements for job qualification;

      3) Establishment of standardized performance standards for the same job task based upon employer requirements;

4) Designation of one joint advisory/program development committee for each articulated program to serve all schools in the program in the local area, with a like committee for the state level; and

5) Establishment of a standardized evaluation system to determine individual ability to meet task performance standards prior to recognizing job qualification or awarding post-secondary credits toward advanced occupational instruction. (See Appendix A for the concepts in their full form.)

c. Joint Occupational Advisory and Program Committees.--Duplin Area joint occupational advisory and program committees were organized for the Automotive, Business Education and Drafting Programs. The committees included all Duplin County high school vocational education teachers and James Sprunt Technical Institute occupational education instructors whose programs were involved in the articulation project. Occupational (craft) advisors nominated by the teachers/instructors of the committees were also committee members as was a vocational/occupational education supervisor from either Duplin County or James Sprunt Technical Institute. This individual became the executive secretary of the committee. One such committee was organized for each articulated program and had the function of providing advisory and program development/review services to all schools conducting the program. The organization and functions of these committees are implementations of Articulation Concept IV. (See Appendix D for sample local area committee.)

Advisory and program committee actions were initially coordinated by the Project Director. Initial overall supervision of project activity and approval of policies and procedures proposed for implementation was exercised by a joint committee of supervisors and administrators from the Duplin County Schools and James Sprunt Technical Institute.

d. Part 2 - Program Development.--The second part of the 1974-75 period of Phase I of the project involved two major actions:

1) Development of job-task inventories.--For each of the vocational/occupational education programs to be articulated, a job analysis survey for a specific occupation was sent to each advisor for that occupation. The full advisory and program committees then met to discuss the responses and to develop master task inventories grouped in duty areas (for each of the occupations) that were acceptable to the advisors concerned. These task inventories contained the listing of job tasks which a worker must be capable of performing to be job qualified.

(See Appendix B for task inventory details.) This action implemented Concept II.

2) Development of Instructional Objectives Guides.--Once the task inventories were developed, the vocational education teachers and the occupational education instructors on each committee jointly took action to develop a standardized instructional guide reference for each program based upon the task inventory. The instructional pages of these guides were developed by designating each job task recognized as an instructional objective and then performing a task analysis to determine what cognitive and/or applicatory skills the worker must have and what technical information must be learned to become job qualified to perform the task. Task performance standards based upon employer requirements and test items for task performance evaluation were also developed during this time. These guides are identified as Instructional Objectives Guides. These actions were implementations of Concepts II, III, IV and V. (See Appendix E for sample instructional page.) The vocational teachers and occupational instructors met one afternoon a week for 12 weeks at James Sprunt Technical Institute to develop the guides. High school teachers participating received renewal credits for their efforts.

3) Purpose of Instructional Objectives Guide.--The primary purpose of the instructional objectives guide is to provide high school vocational teachers and occupational instructors from the CC/TI a common reference to use to determine and ensure that the instructional objectives, instructional content, performance standards and evaluation procedures applied for common instructional blocks or courses are the same at both levels of education. In this way articulation can be achieved and the high school student who is evaluated as job qualified for competencies acquired in common course work at the secondary level can be awarded credit for same at the post-secondary level without question or further evaluation. Material which stated the purpose of the guides was prepared and distributed to all personnel receiving copies of the Instructional Objectives Guides.

2. 1 July 1975-31 July 1976 Actions

a. Application of Articulation Procedures.--This period included use of the instructional objectives guides developed during 1974-75. During May 1976, centralized testing as a form of student evaluation, was tried with a selected sample of high school students from each high school and each vocational program in the articulation project was conducted. The evaluation procedure is based upon the adoption of centralized

testing of high school vocational students administered by a joint test team of high school vocational teacher(s) and CC/TI instructor(s). Testing normally is done annually at the local area CC/TI. Test items are taken from the program's instructional objectives guide. Evaluation purpose is to determine the student's ability to perform recognized job tasks and meet initial employment job-task performance standards in selected tasks. Evaluation includes input from the home school teacher(s). Successful students qualifying in sufficient occupational duty areas are awarded job qualification certificates. The certificate states the student's job qualification in personnel management terms used in the occupation or D.O.T. On the reverse side is shown the courses which the local area CC/TI will award credit based upon high school work successfully completed and evaluated by centralized testing. (See Appendix G - Centralized Testing and Appendix H - Job Qualification Certificate.) Several post-secondary students also participated. The students were all evaluated at James Sprunt Technical Institute. The procedure was considered to be successful and was used during a full scale evaluation conducted in 1977, for approximately 134 Duplin County High School students. This was an implementation of Concept V. Comparisons of test results from high school students in the same subject area also gives the secondary school system administrators a form of quality control.

b. Development of Articulation Policies and Procedures Guide.--Project objectives included a requirement for an articulation model. Based upon articulation concepts adopted, policies and procedures implemented and experiences gained during the period, development of an Articulation Policies and Procedures Guide was initiated in early 1976. The draft guide was developed by the Project Director and then reviewed for comment by Duplin Area administrators and supervisors from the secondary and post-secondary levels of education plus certain State staff personnel participating in the project. The purpose of this procedural policy was to ensure that those who would be expected to use the guide had an opportunity to contribute to its development.

c. Articulation Orientations.--During this period, the Project Director presented numerous articulation orientations at community colleges and technical institutes. (See Appendix I for orientations presented.) Orientations were also given at several conferences.

B. PHASE II (1 AUGUST 1976-31 JULY 1978)

During this phase of the project other North Carolina public secondary school systems and the local CC/TI who had shown interest in articulation and desire to enter into articulation agreements were given

technical assistance to initiate articulation action. This was primarily the result of joint articulation orientations presented by the Project Director for administrators, staffs and faculties from both levels of education, usually at the local area post-secondary institution. Initially, this involved 7 CC/TI and 10 county or city school systems.

1. Development of State Pilot Model Instructional Objectives Guides

As part of the project requirement to develop "State Pilot Models" for the articulation of vocational/occupational education programs, representatives of automotive, business education and drafting teachers/instructors from the high schools and CC/TI involved in the articulation action met in Raleigh together with advisors from their areas during July 1977, to develop "State Pilot Model" instructional objectives guides for their programs, modeled after and in the case of automotive mechanic and executive secretary/ business education based upon those developed originally in Duplin County. State level occupational program development and vocational education consultant staff personnel participated in this effort. The rationale for this procedure was that involving persons from all areas participating in articulation in developing a statewide guide would result in a more valid guide as well as producing a document with which all could identify that would be applicable statewide.

Provision is made for local area adjustments to state articulated programs to accommodate differences in local job tasks (considered as essential requirements by the majority of advisors) which were not provided for in the task inventory. Such differences are integrated into the State guide by addition of those tasks to the task inventory. Instructional time for the added task is made available in several ways, but all State identified tasks are retained so as to provide the student with wider job qualification and employment options than the local area can provide.

Drafting instructors saw a need to develop articulated advanced specialty drafting courses for Architectural Drafting and Design and Mechanical Drafting and Design, based upon the Part I (Basic) Drafting Guide, they had developed in 1977. To this end, the drafting teachers/instructors and advisors from areas involved in articulation agreements met on 18 July 1978 at Fayetteville Technical Institute to discuss content of draft copies of the proposed articulated advanced programs and courses and to propose changes required for validity and adequacy of courses concerned.

2. State Pilot Model Articulation Policies and Procedures Guide

A "State Pilot Model" Articulation Policies and Procedures Guide was developed by June 1978. This document, also modeled after the Duplin Area developed guide, was written in draft form by the

Project Director. Review and comment was then requested from personnel involved in or supportive of articulation from all levels of vocational/occupational educators, guidance counselors, administrators at the local area level across the State and State staff personnel from both the Department of Public Instruction and Department of Community Colleges. The purpose of this procedure was to develop a guide acceptable and applicable to most areas of the State as an articulation model.

CHAPTER III - RESULTS AND ACCOMPLISHMENTS

INTRODUCTION

A curriculum that is successfully articulated (vertically) allows a student to proceed smoothly through educational experiences at the lowest possible cost to the student in terms of time, energy, and/or money spent in achieving his/her occupational goal. Horizontal articulation enhances transfer from one like institution to another in the same program. Such occupational education courses were developed, plus implementing policies and procedures during this project.

A. PHASE I (1974-76)

During this period, the project caused relationships and organizations to be developed in Duplin County that contributed to communication and cooperation between the administrators, advisors, supervisors, guidance counselors and vocational/occupational education teachers/instructors of the Duplin County Schools and James Sprunt Technical Institute. Communication and cooperation are essential elements of the articulation process. Procedures for standardizing instructional content were developed. A procedure for evaluation of student competencies required for job qualification and (for the high school student) concurrent awarding of credits toward advanced placement in the same articulated occupational program was also developed. (See Appendices G and H.) As required by the project directive, an articulation model was also developed.

1. Instructional Objectives Guides

A set of five instructional objectives guides in Automotive Mechanics, Executive Secretary and Stenographer/Business Education, Drafting, Business Administration and Accounting were developed during 1974-76. These guides are the primary vehicles for the articulation of subject matter in similar occupational education programs between high schools in Duplin County and James Sprunt Technical Institute. They contain information and guidance regarding the following:

a. Minimum tasks that a worker is expected to perform in the conduct of a specific job;

b. Primary instructional objectives which are based upon the tasks;

c. Skills and related technical information necessary to accomplish the instructional objectives;

d. Instructional contact hours necessary to conduct the instruction;

e. Performance standards for occupational proficiency in the tasks;

f. Guide to the conduct of sequential occupational proficiency in the tasks;

g. Equipment required to conduct the program of instruction; and

h. Performance test items used in the determination of occupational proficiency. (See Appendix J.)

2. Articulation Policies and Procedures Guide

This was the initial model plan for the articulation of occupational education curricula between high schools and CC/TI which was to be applicable in Duplin County, but was written with wider use in mind. It consisted of the identification, discussion and implementation of the following concepts:

a. Joint-level issuance of policies and procedures, with emphasis on support of articulation by chief administrators;

b. Standardization of occupational education curriculum content;

c. Establishment of performance standards;

d. Designation of advisory/program development committees; and

e. Establishment of an evaluation system to determine individual ability to meet performance standards. (See Appendix J.)

3. Application of Articulation Policies and Procedures to Academic Subjects and Programs

As the Articulation Project developed and its activities became known, several educators at the public school level became interested in articulation. After becoming familiar with the articulation concepts, they reached the opinion that the concepts were also applicable to academic programs for students moving from elementary to middle schools to high schools. The Superintendent of the Duplin County Schools has also gone on record as stating that adoption of the concepts and many of the procedures would

improve the content as well as the delivery of such programs. Several other public school administrator articulation participants have made similar statements. The President of James Sprunt Technical Institute considers that the articulation procedures have produced a model for competency based instruction which he intends to apply to other programs.

B. PHASE II (1976-78)

1. Expansion of Articulation

During this Phase, the project expanded its operations to where articulation agreements between 8 CC/TI and 11 county and city school systems located in the service area or adjacent thereto, including James Sprunt Technical Institute and the Duplin County Schools were supported. The institutions and systems involved are shown at Appendix K. In the early stages of this activity, Duplin Area produced instructional objectives guides and the Articulation Policies and Procedures Guide, plus a number of articulation orientation documents were used as models to start articulation action at the local area level. This accomplishment was in accordance with Phase II objectives.

2. Results and Accomplishments

a. State Pilot Model Instructional Objectives Guides.--As stated under procedures, representatives of the high school vocational teachers and CC/TI instructors, plus occupational advisors from local areas that had entered into articulation agreements, met in Raleigh during 1977 to develop State Pilot Model Instructional Objectives Guides for Automotive Mechanics, Drafting and Executive Secretary/Business Education. State level staff personnel participated also. This joint multi-institutional activity was also an accomplishment and a result of articulation efforts. Fifty-five persons from high school/CC/TI levels of education from across the State participated in this activity.

b. State Pilot Model Articulation Policies and Procedures Guide.--

The State Pilot Model Articulation Policies and Procedures Guide, while based upon its predecessor, the Duplin Area Articulation Policies and Procedures Guide, is a completely rewritten document. The original draft of the rewrite had the benefit of review and comment input from over 60 persons from all levels of education across the State who have had experience in or have supported articulation in some way. This fact makes it truly articulated. The Project Director used the comments and recommendations received to prepare the final draft. That document is being distributed to all school systems in North Carolina and all CC/TI.

The guide provides guidance in detail, together with documentary examples, for the total process of articulation vocational/occupational education programs. This guide was prepared for use by any local educational activity and CC/TI to initiate articulation action with minimum outside assistance.

Conceptually, these documents have the same basic contents as those prepared in the 1974-76 Phase. However, with the added two years of experience and the improved expertise which have contributed to further validation of articulation concepts, plus many more highly qualified contributors and articulation participants, the guides have been upgraded and refined in content to reflect statewide occupational advisor input and occupational education needs at all levels. These guides are applicable to the average vocational/occupational education articulation situation anywhere in the State, with flexibility provisions to accommodate valid local area differences. (See Appendix L.)

CHAPTER IV - DISCUSSION OF PROJECT RESULTS AND ACCOMPLISHMENTS

A. POLICIES AND PROCEDURES

The articulation policies and procedures developed appear to be workable, reasonable in cost and efficient in time required to complete the procedure. Three programs of instruction with vocational/occupational courses having the same instructional objectives now have a guide to achieve the same instructional content and apply the same performance standards in such courses. Communication procedures between the high schools and CC/TI in their area have been developed and are now practiced to varying degrees at administrator, supervisor and teacher/instructor levels. A way has been developed by which students can move smoothly, without delay, from the secondary to the post-secondary occupational program level and receive credit for high school vocatio al course work in which certified as job qualified. Where procedures are fully implemented, articulation can result in the development of a cooperative team effort and instructional content improvement in the delivery of vocational/occupational education at both the local area and State levels. Where policies and procedures are fully implemented, articulation can result in the development of a cooperative team effort and instructional content improvement in the delivery of vocational/occupational education at both levels of education at the local area and State level. It does involve the community served. The purpose of articulation will be served when:

1. The policies and procedures developed by this project are implemented and communication, cooperation and coordination between the public school system, the high school and the CC/TI administrators and vocational/occupational education teachers/instructors are established and maintained;

2. Common courses of instruction have common instructional content and performance standards; and

3. The former high school student receives advanced status credit from the local area CC/TI for vocational work successfully completed in high school.

B. IMPACT OF ARTICULATION

Students have been awarded as much as 40 credit hours by James Sprunt Technical Institute for vocational work completed in high school. (See Appendix M.) These students have maintained above average performance in their program at the post-secondary level. There appears to be improvement in quantity and the quality of students moving directly from high school to the local area CC/TI in this case. This project has received national as well as State acclaim and is the subject of growing interest both within the State and other states who have heard of the project.

C. ARTICULATION PARTICIPATION

Eight CC/TI and 11 school systems had formal articulation agreements at project termination. One school system in a county with no CC/TI has entered into an articulation agreement with CC/TI in two adjacent counties, for the convenience of their students, in the same vocational/occupational program. This required horizontal articulation between the CC/TI. Articulation of vocational/occupational education programs is not a complex procedure, once its concepts are accepted and the participants become used to the requirements for cooperation, coordination and communication with each other. The concepts are in fact five logical and basic steps which must be implemented to achieve articulation in all aspects. The results benefit the student, the program, the institutions involved and the community. At project conclusion, there were several CC/TI working with the local school systems to initiate articulation efforts. In addition, the project has received national interest and recognition.

D. PROPOSED DISTRIBUTION OF ARTICULATION GUIDES

The Articulation Policies and Procedures Guide provides sufficient detail and specifics to guide articulation efforts in any area of the State for any program. It will be distributed to all public school systems and community colleges in the State as well as the routine distribution given research project publications. The "State Pilot Model" Instructional Objectives Guides produced for the three programs concerned, by joint committees at the State level, provide a common instructional reference that is necessary to articulation and of better quality than can be produced locally. These guides will help to ensure that instructional content, performance standards applied and evaluation procedures are standardized for common courses at the secondary and post-secondary levels of occupational education. With minimum adjustment for local differences, the guides can be used anywhere in the State. The

result is articulation. The "State Pilot Model" Instructional Objectives Guides are currently in use in those areas that have already entered into articulation agreements. Reprints of these publications are possible.

E. APPLICATION OF ARTICULATION CONCEPTS TO ACADEMIC PROGRAMS

Articulation concepts and procedures are considered by several public school administrators to be applicable in many ways to academic programs to enhance student movement from the elementary level through successive intermediate educational institutions to high school.

F. ARTICULATION INHIBITORS

Articulation efforts are not without obstacles, even after agreements are signed. These include failure to appreciate the benefits or need for articulation; perceptions that articulation will cause loss of freedom of action and student full-time equivalent (FTE) program enrollment; suspicion of purposes of articulation; difficulty in aligning programs owing to variables in the organization of vocational/occupational programs at the State level which complicate course identifications and instructional objectives. Difficulties in getting people to work together and the normal problem of resistance to change and inadequate follow-up of articulation actions by supervisors also contribute to the problem. Most of the problem areas experienced have been addressed in some form in the Articulation Policies and Procedures Guide which is a project product. (See Appendix N for Articulation Inhibitors.) Articulation works where all participants do their part to make it possible, from the State staff level to the vocational teacher and occupational instructor.

CHAPTER V - CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

1. It is concluded that a better quality articulated vocational/occupational education program can be developed by a joint state occupational advisory and program committee as discussed in CHAPTER II - PROJECT PROCEDURES, Item B-1 (Development of State Pilot Model Instructional Objectives Guides), with less cost and effort than can be done at the local area level, for those occupational programs that are commonly taught by numerous institutions throughout the State. Additionally, there is less diversion of teacher/instructor time from the classroom than occurs when an effort is made at the local area level to develop a complete task inventory and prepare a fully articulated vocational/occupational education program of instruction.

   Articulation requires like vocational/occupational education courses to be developed from the same job task inventory.

Development of a job-task inventory requires the assistance of occupational advisors. Excluding the state pilot model articulated programs developed by this project, with few exceptions, it is understood that the Department of Public Instruction and the Department of Community Colleges each has its own occupational advisory committee for the same occupation in their curriculum program development actions. This practice results in a duplication of effort, especially since parallel action may often result in essentially the same in task inventory to guide instructional objectives. Worse problems are created when considerable differences exist in the supposedly common course instructional content owing to task inventory differences for the same occupation.

One occupational advisory and program committee for each occupational education program should be established at the State level to assist in the development of a state standardized task inventory. Such a task inventory should then be used by both the Department of Public Instruction and Department of Community Colleges in the development of vocational/occupational education courses that have common instructional objectives and content. Action of such a nature will contribute greatly to articulation of the programs between the educational activities involved, since both educational systems would be developing their curriculum and course guides for vocational/occupational programs from the same basic task inventory. It further provides a means to ensure that the secondary level programs use the initial sequence of tasks and duty area groupings within secondary instructional capabilities, whereas the post-secondary actions could be expected to encompass the bulk of the tasks listed on the inventory to develop qualification sequentially to the upper level program objective jobs. Current practices make it very difficult to establish the sequence and content of duty areas (courses) common to third year instruction in high schools and the related levels at the CC/TI level, so that high school students have the necessary instruction to be given credit for the course and engage in advanced instruction.

2. A workable series of policies and procedures for the vertical and horizontal articulation of vocational/occupational education programs between high schools and CC/TI in North Carolina have been identified, developed and implemented.

3. There is considerable and growing interest in articulation at the local area level by both secondary and post-secondary personnel.

4. Articulation at the local area level cannot be expected to work without the full cooperation, effort and desire to work together of the vocational/occupational teachers/instructors at the local area level motivated by the continuing support, supervision and follow-up by the appropriate local area supervisory personnel at both levels of education.

B. RECOMMENDATIONS

1. Continued and greater efforts should be made to improve upon interest, cooperation, coordination and support of articulation to achieve a team approach between vocational/occupational education curriculum and program development staff personnel of the State Department of Public Instruction and the State Department of Community Colleges.

2. Continued and greater efforts are necessary at the local area level by CC/TI and secondary vocational/occupational education supervisors to practice follow-up, encourage and require all vocational/occupational education teachers and instructors in articulated programs to work with each other and use the instructional objectives guides to achieve true articulation of their programs instead of ignoring the guides and obstructing articulation efforts.

3. Local area joint workshops should be conducted to ensure that:

   a. Teachers and instructors understand fully the need for articulation;

   b. The high schools and the local area community college/technical institute personnel recognize that they are integral parts of community education resources that complement each other rather than compete;

   c. The teachers/instructors know how to use the instructional objectives guides; and

   d. An annual articulation activities schedule is developed and adhered to by all concerned.

4. That recognition be given to the fact that failure of educators to cooperate, coordinate and articulate their vocational/occupational education programs works primarily to the disadvantage of the students, degrades the image of the institutions concerned and is an obstacle to program improvement at both levels of education.

5. A concerted effort by the curriculum/program development staff personnel of the Department of Public Instruction and the Department of Community Colleges to initiate articulation:

   a. By establishing a joint occupational advisory and program committee for each vocational/occupational program common to both levels of education;

   b. Jointly develop and use the same instructional objectives and instructional material for common courses of vocational/occupational education programs; and

   c. Apply articulation policies and procedures contained in the guide that lead to standardization.

6. Recognizing that joint development, publication and use of common instructional documents for common courses of instruction by both the Department of Public Instruction and Department of Community Colleges are probably not in the immediate future, it is recommended that the proposed joint occupational advisory committee be used to develop a joint state standardized job-task inventory to be used by both departments in developing curriculum/program guidance for occupational programs shared by the CC/TI and high schools. Valid local area differences in task requirements to be recognized by adding the differences to the joint state task inventory. These differences may be found to be minimal in most cases.

7. That the project-developed State Pilot Model Articulation Policies and Procedures Guide be adopted as the interim guide for the State educational staff for the practice of articulation.

APPENDICES

A - Articulation Concepts and Rationale

B - Job Analysis Survey

C - Duplin Area Articulation Survey

D - Sample Local Area Occupational Advisory and Program Committee

E - Sample Articulated Instructional Objectives Page

F - Purpose of Instructional Objectives Guide

G - Centralized Testing

H - Job Qualification Certificate

I - Articulation Orientations

J - Phase I - Instructional Objectives Guides
Policies and Procedures Guide

K - Articulation Participants

L - Phase II - Instructional Objectives Guides
Policies and Procedures Guide

M - Newspaper Extract - Wallace Enterprise - Students Awarded Advanced Credits

N - Articulation Inhibitors

ARTICULATION CONCEPTS AND RATIONALE

The policies and procedures that are detailed in the Articulation Policies and Procedures Guide are based upon and grouped according to their relationship to the concepts of articulation. The concepts are stated below together with their rationale.

CONCEPT I: JOINT POLICIES AND PROCEDURES ARE REQUIRED FOR SUCCESSFUL ARTICULATION OF VOCATIONAL/OCCUPATIONAL EDUCATION PROGRAMS BETWEEN HIGH SCHOOLS AND THE COMMUNITY COLLEGES/TECHNICAL INSTITUTES. SUCH POLICIES AND PROCEDURES SHOULD BE ISSUED FROM THE HIGHEST LEVEL OF EDUCATION COORDINATING THE PROGRAM. THEY MUST INCLUDE PROMOTION OF CONTINUING ACTIVITIES SUCH AS COMMUNICATION, COORDINATION, JOINT PLANNING AND MUTUAL SUPPORT OF ARTICULATION BY ALL CONCERNED.

Rationale - Concept I: Studies and experience have shown that there is a need for detailed guidance to implement the articulation of vocational/occupational education program subject matter. This is further complicated by the varying perceptions and basic knowledge that educators have pertaining to articulation. Communication between all persons involved at all levels is essential to the process of articulation. Articulation guidance must be prepared and issued as a joint effort (properly from the state level of education) to be binding on all involved in an articulation activity. A wide variety of policies and procedures and articulated program guides for the same vocational/occupational education program, each developed by a different local area, would be counterproductive to the effort, as well as confusing, a duplication of effort and costly. Maximum effectiveness and involvement are normally achieved if statewide user input from both the secondary and post-secondary levels is utilized to develop vocational/occupational education programs as well as joint operational policies and procedures for articulation. In addition to the joint state level policies, directives, coordination and support, there is also a need for binding local area commitment to articulation in the form of joint local area articulation agreements in order to achieve full cooperation from most of the participants at both levels of education. Since a purpose of program articulation is to preclude student duplication of effort, this should extend to preclude duplication of effort in program development.

CONCEPT II: STANDARDIZATION OF VOCATIONAL/OCCUPATIONAL EDUCATION PROGRAM COMMON OCCUPATIONAL SUBJECT MATTER, BASED UPON INDUSTRY VALIDATED JOB-TASK INVENTORIES WHICH SPECIFY THE COMPETENCIES REQUIRED FOR JOB QUALIFICATION, IS NECESSARY IF LOCAL AREA OR STATE ARTICULATION OF A PROGRAM IS TO BE ACHIEVED.

Rationale - Concept II: Articulation of vocational/occupational education programs resulting in the awarding of course credit at the post-secondary level for vocational course instruction successfully completed at the

secondary level can only be accomplished by standardization of instructional basic content for occupational courses common to local area institutions at both levels of education. There is general agreement that this can be accomplished through the employment of standardized instructional objectives based upon the essential job tasks (competencies) considered necessary by the employers and experienced workers for job performance. The competencies were developed initially by performing a job analysis. Since the purpose of vocational/occupational education is to develop job qualified persons, it is only logical that to be job qualified, one must have the ability to perform the tasks required by the employers for the job.

CONCEPT III: STANDARDIZED PERFORMANCE STANDARDS FOR COMMON SUBJECT AREA JOB TASKS ARE REQUIRED FOR EFFECTIVE LOCAL AREA OR STATEWIDE ARTICULATION OF VOCATIONAL/OCCUPATIONAL EDUCATION PROGRAMS. THE PERFORMANCE STANDARDS TO BE USED ARE BASED UPON BUSINESS/INDUSTRY INITIAL EMPLOYMENT PERFORMANCE REQUIREMENTS FOR THE JOB TASK CONCERNED.

Rationale - Concept III: To be realistically valid, performance standards must be based upon those of the business, industry or profession (the employers) concerned with the vocational/occupational education program, since the ultimate objective of such programs is to develop student employability which requires the ability to meet the employer's job task performance standards. It does not appear desirable, practical or realistic to have a variety of job task performance standards applied for the same tasks in the same school system, local area or region. Employers expect the same performance for the same task, job level, and pay in the same occupation. When only primary tasks and performance standards are considered, there can be found little significant difference in stated performance standards for the same task in the same occupation by employers across the State. V-TECS has verified the foregoing in multi-state surveys conducted to obtain such information. Many trades and industries have moved or are moving toward the establishment of national performance standards. Consideration of the foregoing makes it obvious that the standardization of instructional objectives, based upon recognized job tasks and the application of job task performance standards based upon employer requirements are the keys to subject matter articulation.

CONCEPT IV: ESTABLISHMENT OF JOINT COMMITTEES TO SERVE IN A DUAL OCCUPATIONAL ADVISORY AND PROGRAM DEVELOPMENT ROLE (BOTH AT THE LOCAL AREA AND AT STATE LEVELS), CONSISTING OF OCCUPATIONAL ADVISORS (CRAFT CONSULTANTS), HIGH SCHOOL VOCATIONAL TEACHERS, COMMUNITY COLLEGE/TECHNICAL INSTITUTE OCCUPATIONAL INSTRUCTORS AND A VOCATIONAL/OCCUPATIONAL EDUCATION SUPERVISOR OR CONSULTANT IS ESSENTIAL TO ARTICULATION OF SUBJECT MATTER. THERE SHOULD BE ONE SUCH COMMITTEE FOR EACH ARTICULATED PROGRAM PER LOCAL AREA, SERVING ALL SCHOOLS CONDUCTING THE PROGRAM IN THAT AREA AND ONE AT THE STATE LEVEL.

Rationale - Concept IV: Current thoughts prescribe that an advisory committee be established for each vocational/occupational education program conducted by each institution at both the secondary and post-secondary levels. As a rule such committees consist of only the craft advisors. The question arises when considering articulation: if several institutions in the same area articulate their program, whose committee would be the source of advisory guidance? (The area in this case is the "service area" of the community college/technical institute (CC/TI) serving the county or larger area of the high schools concerned.) One joint area advisory and program committee for a specific vocational/occupational education program, per post-secondary institution service area, appears to be a logical solution. Such a committee can result in better advisor service, program standardization and consistency, for the local area schools involved in the program than a number of committees.

Each advisory and program committee is to be designed to provide occupational advisory service to all local area secondary schools and the post-secondary institution in the area conducting instruction in the same vocational/occupational education program. Such committees are expected to include at the local area all high school vocational teachers and all CC/TI occupational instructors involved in the occupational program, as well as occupational advisors. This will do much to make articulation a working fact by providing a face-to-face communication vehicle for the teachers/instructors and advisors involved in the program. Such a procedure is used quite successfully in several other states and has been employed in the Duplin County Articulation Research Project where advisor availability to meet requirements for each institution is a problem at the local area. A key factor is that all teachers/instructors have input opportunity and can interact with the occupational advisors. As a result, the products of such committees are more acceptable to those with interest in the area concerned. (Special procedures are required when a large number of vocational teachers and occupational instructors are involved in the same articulated program in the same local area.)

If articulation is to be practiced laterally as well as vertically, for common programs of instruction (a practice already a matter of record), it will be necessary to develop a joint advisory and program committee at the State level with local area representative participation to coordinate and develop the programs and to prevent duplication of effort. Lateral articulation becomes necessary to accommodate students who must transfer between institutions at the same educational level and for those high school vocational students who come from counties that do not have a community college or technical institute within the county area and as a result elect to attend the nearest such institution to their home.

CONCEPT V: EVALUATION OF STUDENT PERFORMANCE, DETERMINATION AND RECOGNITION OF STUDENT JOB QUALIFICATION AND DETERMINATION OF THE CREDITS TO BE AWARDED THE HIGH SCHOOL STUDENT TOWARD ADVANCED STANDING AT THE POST-SECONDARY LEVEL IN ARTICULATED PROGRAMS IS BEST ACCOMPLISHED BY EMPLOYING THE FOLLOWING:

A. USING COMPETENCY BASED, STANDARDIZED, TEST ITEMS OR TEST ITEM OUTLINES FOR EACH COMPETENCY (WITH PERFORMANCE STANDARDS STATED) DEVELOPED BY THE ADVISORY AND PROGRAM COMMITTEE;

B. PROVIDING FOR JOINT TEST TEAMS TO ADMINISTER ANNUALLY A PORTION OF THE STUDENT JOB QUALIFICATION EVALUATION (CENTRALIZED WHERE POSSIBLE); AND

C. PROVIDING FOR FORMAL RECOGNITION OF STUDENT PROGRAM ATTAINMENTS IN APPROPRIATE, STANDARD, PERSONNEL MANAGEMENT TERMS AS TO JOB QUALIFICATION(S) ATTAINED, PLUS A RECORD OF POST-SECONDARY ADVANCED STATUS CREDITS EARNED FOR THE HIGH SCHOOL STUDENTS.

Rationale - Concept V: The evaluation procedures now employed in vocational/occupational education programs vary widely between individual teachers/instructors. Some form of evaluation procedure and test item standardization appears necessary to ensure that a student is job qualified by employer standards and that the high school student has also achieved the competencies for which advanced program credit is to be awarded by the local area post-secondary institution. The key to reasonable evaluation standardization is to develop valid and reliable test items that are competency based and related to one or more of the job tasks required in job performance. The performance standards for the test item should be those that must be met for job task qualification.

Test items should concentrate upon determining the student's task performance abilities and knowledge of related technical information. Type test items or test item outlines (test items that state test item subject and action only, requiring provision of specifics prior to use) should be developed by the teachers/instructors on local area or state program advisory and program committees. This type of test item informs the instructor as to how the student's performance can be evaluated with validity and reliability, but removes the problem of test item compromise. Repeated use is then possible of test item outlines, since there is no reason why a student should not know that job qualification will be determined by evaluation of student job-task performance competencies.

The evaluation process in a specific vocational/occupational program can be made even more reliable if an evaluation is administered annually at a central location by a joint testing team for all vocational/occupational courses completed, with all local area high schools and the local CC/TI participating. Such a procedure has the advantage of providing a check on adherence to instructional content and performance standards, reducing bias and resource problems, adding validity to evaluation and providing a means for quality control of vocational/occupational programs. If secondary students are evaluated as job qualified in one or more job duty areas, that are identified as courses of instruction at the community college/technical institute level, they are also considered to be qualified to be awarded course credit for those courses without further testing, if they enroll in the advanced phases of the program of instruction within certain time limits.

Recognition of job qualification in personnel management recognized terms gives the potential employer and the former student job qualification identification. Current diplomas and certificates in many cases contain only the information that the student completed a program of instruction, but gives little or no indication as to what the holder is capable of doing. Employers and supervisors prefer information stated in terms with which they are familiar.

EDUCATOR ACCEPTANCE OF ARTICULATION CONCEPTS:

The North Carolina study on articulation conducted during the period 1973-1976 by Carlyle P. Woelfer, independently of the Duplin County Articulation Project, was based upon a statewide, random sample survey of secondary and community college/technical institute vocational/occupational educators. Survey responses indicated that over 70% of the respondents to the survey accepted the concepts discussed in the preceding pages.

CLOSING STATEMENT:

Articulation of subject matter does not require specific instructional procedures. The primary purpose of articulation from the instructional standpoint is to provide guidance for the achievement of instructional content standardization for vocational/occupational courses of instruction that are common to different institutions at the same or different levels of education. With the standardization of instructional content comes the requirement to apply the same terminal performance standards for the same job task or competency which constitute the instructional objectives. Articulation does not prescribe how a subject should be taught, but it does apply the instructional sequencing policy for duty areas and tasks of moving from simple to complex wherever required prerequisites do not preclude such action.

JOB ANALYSIS SURVEY TO DETERMINE
OCCUPATIONALLY RECOGNIZED TITLES
FOR
MAJOR BLOCKS OR DIVISIONS (DUTY AREAS) OF
AN OCCUPATION AND THE PROJECTS (MODULES),
WORK ASSIGNMENTS OR TASKS COMMON OR ROUTINE
TO THE BLOCKS

This is a job analysis survey. Its purpose is to determine first the various divisions or duty areas of activity peculiar to the highest skill level job(s) in a specific occupational area, such as: Brake Repair for a General Automotive Mechanic in Automotive Maintenance & Repair or Typing for an Executive Secretary in Business and Office Occupations. Once the activity areas are determined, you then determine what tasks or work assignments are normally required in performance of the duty or major activity area, such as "Bleed Brakes" in Brake Repair or "Prepare Manuscripts" in Typing. Occupational advisors are considered to be the most valid source of this information. As used here, project and task have the same meaning.

Attached is a copy of a draft task inventory or listing which contains the tasks or worker job competencies considered as commonly required in performance of the subject job. These tasks have been grouped according to the activity or duty area to which they are most closely or most frequently related. This inventory was taken from recent occupational publications. Advisors are requested to review the task inventory to ensure that task groupings and tasks listed in the group are both accurate and current with occupational requirements. Titles should be those most commonly used and the list should be as complete as possible as it pertains to primary or essential tasks. Since the task inventory will be used to develop or update an occupational program of instruction, tasks and duty areas shown should be those known to be required for at least two or three years into the future. Items being phased out are not valid. The right hand side of each page of the inventory provides space in which to show changes you consider needed for an accurate, valid list. You should reflect requirements that satisfy both local and regional needs. We use the term "complexity" to describe duty areas and tasks that have many activities in their performance which the worker must know and/or do. A "simple" task has few components. A "complex" task will have many components or actions for completion.

The first page of the inventory shows the proposed duty areas or task groupings common to the occupation.

Should you recommend consolidation, addition, or deletion of any of the blocks/divisions shown, you should feel free to make such changes. We are most interested in what are the most widely recognized major divisions of the occupation, their titles, and the order of complexity. The least complex being number 1, followed in progression to the most complex. Place the numbers in front of the titles, in the space provided.

The second and succeeding pages of the survey break out the blocks/divisions into recognized sub-divisions, work assignments, projects or tasks common, or routine to the occupational division or block. In the left hand column, identified as No. "1", we have listed sub-divisions or projects of work titled as could be determined from information available to instructors. Here we request that you rank order the projects again according to their complexity, with the least complex number 1 progressively numbering to the most complex which would have the highest number. Use the space provided for the number. Here, as for the blocks, we have provided Column IV for you to enter titles for the sub-divisions or projects which you consider mis-named or titled; or to delete, add, or consolidate, as you see fit. We want to be as current and accurate as your knowledge of the occupation permits. Our interest is to use titles, terms, etc., recognized as common or standard for the occupation, by industry or business.

We ask in Column II for your opinion as to the frequency that the average worker will be required to perform the project or work assignment, by checking "seldom," "weekly," "daily," or "more often." This establishes the priority and importance we will attach to teaching the student how to perform the project.

In Column III we ask for you to identify the workers skill or competency levels that are expected to be able to do all of the work involved in the work assignment or project. The question is, "Must he know how to do the operations involved?", rather than, "Will he do it?" Column III gives us an idea as to what experience and skill level of the worker will normally do the job. If a worker at lower skill levels would do only part of the job/project such as "remove a part," "serve as a helper," or "type rough drafts," leaving the finished job to more skilled, make a note to that effect. Tasks which only the most skilled and very experienced workers will be expected to perform may not be appropriate in the course of instruction which qualifies the individual to initial entry for the job level concerned. However, if the worker must have the basic skills for the task to be capable of performing other activities at his job entry level or soon thereafter, such remarks should be entered for the task(s) concerned. Tasks which are <u>best learned</u> on the job should be identified where appropriate.

OCCUPATIONAL DUTY AREAS, DIVISIONS OR
BLOCKS OF THE OCCUPATION

OCCUPATION: Automotive Mechanic

Common Titles used to Identify the Duty Areas, Blocks or Divisions of the Occupation. Place Number in space to show least complex (1) then in order to most complex.	Title You or Your Business/Industry Recognize for the Listed Block/ Division if Title Shown is not Acceptable.
1 Lubrication and Vehicle Operating Maintenance	
2 Cooling System Maintenance and Repair	
3 Automobile Heater Maintenance and Repair	
8 Standard and Power Steering Unit Maintenance and Repair	
6 Power Train Maintenance and Repair	Drive Line and Rear End Repair
10 Automatic Transmissions Maintenance and Repair	
7 Braking System Maintenance and Repair	
4 Fuel System Maintenance and Repair	
9 Front End Maintenance and Repair	
11 Automobile Air Conditioner Maintenance and Repair	Heating and Air Conditioner Repair
5 Engine Overhaul	
12 Electrical Systems Maintenance and Repair	

(NOTE: The numbers shown in column I of Appendix B-1a and B-1b are samples of advisor entries. Advisor receives blank form.)

APPENDIX B-1a

DUTY AREA, DIVISION OR BLOCK TITLE: Standard and Power Steering Unit Maintenance and Repair

TASKS, SUB-DIVISIONS, PROJECTS OR WORK ASSIGNMENTS COMMON OR ROUTINE TO THE DUTY AREA, BLOCK OR DIVISION OF OCCUPATION

(I) Common Title of Task, Sub-Division, Work Assignment or Project. Number in Order of Least Complex as Number 1 to the Most Complex.	(II) Frequency That Average Worker Will Be Required to Perform the Task, Project or Sub-Division.				(III) Level of Complexity; Normally Performed By Skill Level or Levels Checked.			(IV) Title Normally Used By Your Industry/Business for the Task, Sub-Division, Project or Work Assignment, if You Disagree With That Shown. Also Make Deletions, Combinations, or Additions to Column I if Appropriate.
	SELDOM	WEEKLY	DAILY	MORE OFTEN	LOWEST	INTER-MEDIATE	HIGHEST	
8 Standard and Power Steering Unit Maintenance and Repair							X	
3 Adjust worm and sector in steering box			X		X			
7 Inspect and replace steering spindles			X			X		
8 Inspect steering			X			X		
1 Lubricate the power steering			X		X			
2 Lubricate the steering box and linkage			X		X			
12 Rebuild power steering cylinder			X				X	
9 Repair or replace manual steering components			X			X		
10 Repair or replace power steering components			X				X	

DEVELOPING A COMMITTEE COORDINATED JOB ANALYSIS FROM INDIVIDUAL ADVISOR RESPONSES

The following is a suggested method for utilizing the responses received from various persons as input for the Job Analysis Opinion Surveys, in an effort to achieve an agreed upon listing of occupational blocks or divisions in a standardized order, as well as titles. This would be followed by a like effort to determine the tasks considered to be a normal worker function for each of the duty areas, major blocks or divisions of the occupation.

1. Call a meeting of the advisory and program committee and discuss the occupational duty areas, major blocks or divisions, based upon survey responses, and reach an agreement with the full committee on the duty areas and titles that appear to be most acceptable, listed in order of complexity.

2. Following the establishment of an agreed upon order of the major blocks or divisions of the occupation, identify the tasks organic to each block and list in sequence order of complexity or as required for job performance. Use the titles that appear most acceptable. The tasks should be identified as what the worker is expected to do, not how. These are usually stated as action requirements, such as draw, repair, adjust, audit, balance, make, record, etc. At the same time the frequency of the task and the skill or competency level should be identified with the task. The responses on the opinion surveys and the comments of the advisors present should be considered. (Complexity here means number of parts or actions required in duty area or task performance.) Appoint an individual to record agreed upon master listings.

3. Ruled sheets or blank survey type forms should be used to record the task list information developed. These task listings become the task inventory and will then be used to develop the skills or competencies (the operations) that the learner must acquire to be able to perform the task, by the process of task analysis for each task. See Appendix C-2a(1)(2)(3).

4. If there are common tasks or requirements to be found in all blocks, they can be identified as the basic element or the base block and possibly taught early to avoid unnecessary repetition. In determining the sequence of instruction, there may be certain ones must be completed first before others can be performed. In some occupations, there may be no such element, in others it may be obvious.

5. During the process discussed in "2" above, if sufficient advisors are present, it may be desirable to break up the larger committees into sub-groups after the titles of the major activity blocks and the sequences are determined, and basic blocks are determined. These sub-groups could be used to develop the program

task listings that are peculiar to each division for the occupations that have a large number of divisions and tasks, such as automotive and business administration. After subgroups have completed their blocks or divisions, time permitting, they could read off whatever they had developed, to get full committee reaction. Another approach is to get as much done as possible and complete the rest at the next advisors' meeting which might be the next month. It is essential that enough be accomplished during the meetings with craft advisors so that the teachers/instructors will have a sufficient amount of the occupational task inventory upon which to perform a task analysis. Task analyses can be performed at a time more convenient to the teachers/instructors.

ARTICULATION RESEARCH PROJECT
OCCUPATIONAL TASKS
AUTOMOTIVE MECHANICS

Frequency that average worker will be required to perform the task.

Level of difficulty: normally performed by skill level or levels checked.

BLOCK OR DIVISION: 4.0 (Con't)

TASK		MONTHLY OR LESS	WEEKLY	DAILY	MORE OFTEN	LOWEST	INTER-MEDIATE	HIGHEST
4.072	Inspect and replace brake shoes.				X		X	
4.081	Inspect and turn rotor if necessary (disc brakes).	X						X
4.082	Inspect and turn brake drums.		X					X
4.083	Radius grind brake shoes.		X				X	
4.09	Repair or replace wheel cylinder.				X		X	
4.10	Repair or replace master cylinder.				X		X	
4.11	Repair or replace hydraulic power cylinders and valves.				X		X	
4.12	Perform operational brake inspections.				X			X
BLOCK OR DIVISION:	FUEL SYSTEM MAINTENANCE AND REPAIR 5.0							
5.01	Inspect, service, or replace carburetor air cleaner.				X	X		
5.02	Clean or replace fuel filter units.				X	X		
5.03	Remove, service, or replace fuel pumps or fuel lines and hoses.		X				X	
5.04	Install carburetors.				X		X	
5.05	Inspect and measure fuel flow and pressure of system.	X					X	

APPENDIX B-3

6.0

A RESEARCH SURVEY TO DETERMINE ACCEPTABILITY OF PROPOSED PROCEDURES AND POLICIES TO EXPEDITE AND ACCOMPLISH VOCATIONAL AND TECHNICAL EDUCATION PROGRAM ARTICULATION BETWEEN HIGH SCHOOLS AND COMMUNITY COLLEGES/TECHNICAL INSTITUTES

RESEARCH PROJECT TITLE: ARTICULATION OF OCCUPATION EDUCATION PROGRAMS BETWEEN PUBLIC SCHOOLS AND COMMUNITY COLLEGES/TECHNICAL INSTITUTES

A RESEARCH PROJECT OF THE NORTH CAROLINA OCCUPATIONAL RESEARCH UNIT CONDUCTED BY JAMES SPRUNT TECHNICAL INSTITUTE AND DUPLIN COUNTY PUBLIC SCHOOLS

INTRODUCTION

North Carolina secondary and post-secondary educational systems were committed to the articulation of vocational and technical education programs by State level policy announcement in 1970. There have been some positive efforts to implement this commitment; however, program articulation is still more of a goal than a fact.

Studies have been conducted which indicate a need for action in several related areas, to remove barriers to program articulation, before such effort can be met with success. What appear to be major barriers are created by:

1. Variations in job competency requirements assigned the same level job in the same occupation, by different institutions;

2. Use of curriculum with different instructional content to guide instruction to achieve competency requirements for the same job in a given occupation; and

3. Often inadequate State and lower level administrative and supervisory support and guidance, plus follow-up in program articulation efforts.

The following considerations appear to be possible solutions to the removal of the barriers cited:

1. Development of State level policies and procedural proposals leading to standardization of competency requirements for the various levels of jobs in a given occupation, for which instruction is conducted, with a supporting competency level testing and certification program.

2. Development of policy and procedural proposals which would result in standardized content curriculum, with emphasis on job-essential instruction for use by all institutions conducting instruction in that occupation.

3. Emphasis on and improvement in guidance, support and effort, starting at the State level and carried throughout the secondary and post-secondary levels of education to improve the climate for general articulation of occupational programs.

The purpose of this survey is to employ the talents of the occupational education supervisors and vocational and technical education instructors at both the secondary and post-secondary education levels in Duplin County, to determine the validity, suitability and acceptability of a series of proposals and statements in the survey instrument that are related to program articulation. If the primary proposals and statements are accepted as valid and appropriate by the respondents, it will be considered appropriate to include them in the policies and procedures that will guide the conduct of the pilot project. Those elements which do not gain acceptance will be reviewed and studied for further modification and explanation or elimination. The policies and procedures will also be used in the development of competency standards for each competency level of a given occupational program, plus competency level tests to be used by all instructors in a given vocational program. In addition, they will be used to guide the development of standardized curriculum for each of the programs in the project for use by all institutions involved.

For this survey, articulation is defined as the policies and procedures employed to ensure continuity and relevancy of instructional programs to provide the competencies and related knowledge necessary for the smooth transition of a vocational or technical student progressively through the various levels of his educational experience to reach his desired objective, without delay or duplication of effort. Program articulation includes horizontal, the movement between schools and systems at the same level; and vertical, the movement between grade levels and different levels of educational units.

To reduce the length of terminology that will be used repeatedly in the material that follows, the word "program" will be used in place of the term "vocational and/or technical education program," since this survey pertains only to such programs.

You are requested to read each of the statements that follow and circle the number in the group after the statement that most closely indicates your reaction to that statement. Assume that the numbers have the following meaning:

a) 4 - Strongly Agree (SA)
b) 3 - Agree (A)
c) 2 - Undecided (UD)
d) 1 - Disagree (D)
e) 0 - Strongly Disagree (SD)

Comments regarding a specific statement are welcomed and should be identified by statement number and placed in the space to the right of the statement.

COMPETENCY STANDARDS

The statements that follow pertain to proposals and policies related to statewide standardization of job competency requirements.

	SA	A	UD	D	SD
1. Graduates of post-secondary programs will not restrict themselves to job opportunities in the service area of the post-secondary institution.	4	3	2	1	0
2. The programs conducted by the public education systems should qualify the graduate to meet at least the initial entry level of job competency requirements.	4	3	2	1	0
3. The most essential elements of a program are the job competencies to be taught and learned for a given job level and occupation.	4	3	2	1	0
4. Program overemphasis on purely local job-competency peculiarities can result in graduates who lack the industry essential competencies for employment in other parts of the State.	4	3	2	1	0
5. Since State and Federal funds together are the primary source of support for the Community College System, such institutions are justified in basing their instruction on the statewide job-competency requirements of a given industry.	4	3	2	1	0
6. The occupational competency standards established for graduates of secondary school programs should be consistent with the standards established for the same level of competency in like programs in other high schools and units of the Community College System.	4	3	2	1	0
7. When studied carefully, the essential competency requirements for an industry-recognized job level in a specific occupation are basically the same throughout the State.	4	3	2	1	0
8. The specific competency requirements for a given job level and occupation, identified as peculiar to local area employers, should not be included as industry-recognized competency standards.	4	3	2	1	0
9. Instruction to meet job competency requirements peculiar to one or more local area employers should be provided by the employer, or as a special course conducted by the institution concerned for those to be employed locally.	4	3	2	1	0

	SA	A	UD	D	SD
10. Current diplomas or certificates issued for satisfactory program completion are of little value as indicators of the job competencies.	4	3	2	1	0
11. The potential employer, the employee and the community all benefit if school-trained personnel can present official evidence of having acquired a job-competency level that is recognized by industry.	4	3	2	1	0
12. Competency requirements adequate for an industry as a whole can be easily determined by the local instructor assisted by his local advisory committee.	4	3	2	1	0
13. The failure to provide for standardization of competency requirements in programs results in graduates of programs in the same occupation and job level but from different institutions having different competencies which may not be adequate for the occupation statewide.	4	3	2	1	0
14. Employment placement would be improved for the graduates of programs if employers have a way of determining that the essential job competency requirements recognized by the industry have been met by the applicant.	4	3	2	1	0
15. Industry-recognized competency standards could be best determined using the following procedures as a guide:					
a) Organize a committee for each occupational program with membership representing the teaching institutions, the industry concerned and school system and/or community college level of occupational program supervisors to develop the standards.	4	3	2	1	0
b) The institutional representation should come from those instructors who teach in the particular occupation at both the secondary and post-secondary levels.	4	3	2	1	0
c) By providing for industry representation from those industry members who are serving on local advisory committees and have a reputation for knowledge of job requirements and competencies.	4	3	2	1	0
d) The committees established should be maintained as long as the program is conducted.	4	3	2	1	0

		SA	A	UD	D	SD
16.	To ensure that the graduates of a program, at either level of education, can meet the required competency standards, a standardized, industry-recognized test should be required to validate or determine the level of competency that the individual has attained.	4	3	2	1	0
17.	Standardized competency level tests should be developed by the committees that developed the competency standards.	4	3	2	1	0
18.	Standardized competency level tests should include approximately 50% practical work demonstration or problem solving.	4	3	2	1	0
19.	Standard competency level tests should be administered by the local institutional instructor, who conducted the instruction.	4	3	2	1	0
20.	Standardized competency level tests should be used by all institutions conducting a given program.	4	3	2	1	0
21.	When a student is certified by appropriate authority as having successfully passed a standardized competency test at the initial entry level or higher, he should be awarded an industry and Community College System recognized certificate, which confirms the level of competency attained.	4	3	2	1	0
22.	It is not an infringement on a teaching institution's prerogatives to require those who have successfully completed a program to demonstrate their competency level by taking a competency level certification test required by a higher authority.	4	3	2	1	0
23.	Standard, industry-recognized competency level tests would serve to identify the poorly trained and those who had received social promotions and preclude their entering the labor market with a competency inference, when in fact they are not competent.	4	3	2	1	0
24.	The adoption of industry-recognized occupational competency standards and the employment of competency level certification tests can help to provide valid program instructional objectives.	4	3	2	1	0

	SA	A	UD	D	SD
25. To be fully effective, competency standards committees should have participating educational system support.	4	3	2	1	0
26. The system and/or community college occupational education supervisor proposed as a member of a competency standards committee would be appropriate as the "executive" secretary of the committee to ensure proper support.	4	3	2	1	0
27. The duties of the executive secretary of an occupational competency standards committee could properly include:					
a) Soliciting nominations and coordinating selections of personnel for committee membership;	4	3	2	1	0
b) Arranging and coordinating committee meetings with the committee chairman;	4	3	2	1	0
c) Serving as the office of record and point of contact for the committee and its activities;	4	3	2	1	0
d) Soliciting recommended changes to competency standards and competency level tests; and	4	3	2	1	0
e) Arranging for the issuance of competency level certificates for the committee or other authority.	4	3	2	1	0
28. To ensure that program requirements are kept current, competency change proposals and competency level test modifications, when appropriate, should be encouraged from both the teaching institutions and the industry concerned for consideration by the committee.	4	3	2	1	0
29. To keep current with industry and student needs, members of a competency standards committee should make an effort to discuss program requirements with interested employers and former students.	4	3	2	1	0
30. An individual who has his level of competency validated by an industry-recognized examination and is issued a certificate of competency will have the following advantages:					

	SA	A	UD	D	SD
a) He will know his competency level for employment or for advanced instruction.	4	3	2	1	0
b) Industry will have greater confidence in the validity of the individual's occupational competency level.	4	3	2	1	0
c) James Sprunt Technical Institute will be spared the problem of testing a graduate of a secondary level program to determine his competency level prior to enrolling him in advanced instruction in his occupation.	4	3	2	1	0
d) True articulation of programs of instruction between secondary and post-secondary institutions and systems will be possible.	4	3	2	1	0
31. Students demonstrating little potential for passing standardized competency tests should be trained under special programs and procedures.	4	3	2	1	0

STANDARDIZED CURRICULUM

The following statements are concerned with the standardization of curriculum for a given occupational program, through the provision of industry-recognized job-essential instructional content. The standardized curriculum would be used by all institutions conducting a given program.

32. Industry competency standards will be difficult to achieve and maintain, if programs of instruction are conducted with each institution preparing its own curriculum without industrywide input.	4	3	2	1	0
33. Any qualified program instructor should be able to prepare a curriculum and program of instruction that will be adequate, if he is familiar with the occupational competency standards and requirements for his occupation.	4	3	2	1	0
34. Articulation of programs of instruction would be a fact if all secondary schools and post-secondary institutions which conduct instruction in the same occupation were to use the same job-essential content curriculum.	4	3	2	1	0
35. It would be advantageous for secondary level students, who wish to continue in advanced vocational instruction or to pursue an AAS degree in a technology program at the post-secondary level, to be provided a technology preparatory program in high school.	4	3	2	1	0

	SA	A	UD	D	SD
36. Secondary and post-secondary institutions conducting programs of instruction in the same occupation could use the same basic or standardized instructional content curriculum, if such curriculum provided for the following:					
a) The minimum essential job-competency instructional content for each job level recognized in the occupation concerned.	4	3	2	1	0
b) That the curriculum be designed in competency level sequence of instruction blocks or phases, starting with initial entry level and progressing to higher competency levels.	4	3	2	1	0
c) Each of the sequential blocks of instruction should contain the minimum instructional content essential to the achievement of a given level of job competency.	4	3	2	1	0
d) Where valid local industry special competencies are required for a specific job level, in addition to the industrywide competencies, provision could be made in the standardized curriculum for 10% to 15% optional course content hours which could be filled by locally developed requirements or use the optional material provided by the curriculum committee.	4	3	2	1	0
37. Sequential competency blocks of instruction or phases would permit a student to complete instruction for one level of competency before progressing to the next.	4	3	2	1	0
38. If sequential competency blocks of instruction are used in a program, it would be possible for a student who has completed one or more blocks of instruction to request a competency level test to try and improve his job opportunities, if he must leave school before completing a program.	4	3	2	1	0
39. Better programs of instruction can be offered in a given occupation by all institutions, if they are based upon standardized curriculum.	4	3	2	1	0
40. When a limited number of institutions will conduct a given program, the competency standards, competency level tests and the curriculum should be developed by the same committee (such as James Sprunt Technical Institute and Duplin County Schools).	4	3	2	1	0

		SA	A	UD	D	SD
41.	For purposes of the Research Project, a committee to develop competency standards and a standardized content curriculum for a given occupation should be titled: Duplin Area Occupational Competency and Curriculum Standardization Committee (add the name of program of concern).	4	3	2	1	0
42.	To ensure that the curriculum content is kept current and meets future requirements, competency standards and curriculum development committee members should make a concerted effort to keep current with industry and instructional change requirements through contacts with industry and program graduates.	4	3	2	1	0
43.	Secondary level programs of instruction should lead to at least initial entry levels of job competency or the program should not be conducted as a vocational program.	4	3	2	1	0
44.	Using standardized content curriculum with options, if desired, James Sprunt Technical Institute should be prepared to conduct their programs of choice, from the initial competency level to the advanced levels peculiar to the programs offered.	4	3	2	1	0
45.	A secondary student, who has successfully completed instruction based upon a standardized content curriculum and was awarded a certificate of competency should expect to be admitted to the next appropriate level of advanced instruction in a post-secondary institution upon presentation of his certificate of competency.	4	3	2	1	0
46.	A standardized content occupational curriculum, as developed by an occupational competency and curriculum standardization committee, representing a number of institutions would:					
	a) Have the advantage of being based upon wider occupational information resources and broad backgrounds of competencies and experiences available in committee members;	4	3	2	1	0
	b) Result in improved instructional content for programs presented at both levels of education; and	4	3	2	1	0
	c) Result in program articulation when used by both the secondary and post-secondary institutions concerned.					

GENERAL ARTICULATION PROCEDURES AND CONCERNS

The following statements are related to general procedures and concerns considered appropriate to the support of program articulation as brought about by the standardization of job-competency requirements and curriculum content for like job levels in a given occupation.

	SA	A	UD	D	SD
47. Articulation as well as instruction can be improved if instructors from both levels of education involved in the same program hold periodic local area meetings to discuss instructional problems and related areas of concern.	4	3	2	1	0
48. Articulation of programs of instruction between the secondary and post-secondary institutions will be more effective and complete, if:					
a) Personnel at all levels of education are aware of, support and practice announced articulation policies.	4	3	2	1	0
b) The State, County and institution levels of support and interest in program articulation are both obvious and continuous.	4	3	2	1	0
49. One occupational advisory committee for each occupational program conducted in the county, made up of select industry personnel, would be more effective and contribute to program articulation between institutions and educational systems if it served the advisory needs of James Sprunt Technical Institute and all of the high schools in the county, instead of one per school.	4	3	2	1	0
50. It will contribute to program articulation and improve programs of instruction if instructors of both secondary and post-secondary levels are members of the advisory committee that serves all local programs in their occupation.	4	3	2	1	0
51. It would be advantageous and articulation would be further improved, if a post-secondary unit conducted needed vocational education instruction for local high school students when the high schools in the area lack the initial capability to conduct such instruction.	4	3	2	1	0

	SA	A	UD	D	SD
52. In some instances, articulation and instructional quality will be better served if expensive items of equipment are mounted in semi-trailers or made otherwise mobile and shared by several or all institutions in the county that use such equipment, instead of trying to buy one for each institution or do without.	4	3	2	1	0
53. If provision is made for selected high school students to enroll in appropriate advanced program instruction at the local post-secondary unit while completing work at the high school level, it would enhance interest in advanced program training and contribute to articulation.	4	3	2	1	0
54. Public awareness that successful completion of a secondary level program in a given occupation can serve as the preparation for advanced level training at the post-secondary level can help to improve the image of vocational instruction in the high schools.	4	3	2	1	0
55. Students who have completed programs at either the secondary or post-secondary level of education should be permitted to take as many levels of competency tests as he considers to be within his capability and awarded a certificate for the level demonstrated, even if higher than the instructional objective of the program completed.	4	3	2	1	0
56. The future needs in numbers of jobs, their locations and competency requirements for specific programs can be more accurately determined if occupational competencies and curriculum instructional content are developed by state and/or area committees discussed previously.	4	3	2	1	0
57. Articulation can be improved if post-secondary institutions provide counselling and testing services for interested secondary students at places and hours convenient to the students.	4	3	2	1	0

Respondent position (Mark with "X" as appropriate)

	Secondary	or	Post-Secondary	Project Participant
Supervisory:	_____		_____	Yes ___
Instructor:	_____		_____	No ___

Please Return To: Articulation Project Coordinator, James Sprunt Technical Institute, P.O. Box 398, Kenansville, N.C. 28349

ARTICULATION RESEARCH PROJECT

1974-1976

JAMES SPRUNT INSTITUTE AND DUPLIN COUNTY PUBLIC HIGH SCHOOLS

James F. Strickland	Chairman of Board of Trustees, James Sprunt Institute
Russell Brock	Chairman of Duplin County Board of Education
Dixon S. Hall	President of James Sprunt Technical Institute
Charles H. Yelverton	Superintendent of Duplin County Public School System

DUPLIN AREA AUTOMOTIVE ADVISORY AND PROGRAM COMMITTEE

Lloyd Stevens	Executive Secretary	Assistant Superintendent for Vocational Education, Duplin County Schools
Lester Anderson	Advisor	Warsaw Motor Company Warsaw, North Carolina
Harry R. Cannaday	Advisor	605 South Madison Avenue Goldsboro, North Carolina
Jim Russ	Advisor	Russ Chevrolet Wallace, North Carolina
Elmore Spell	Advisor	West Auto Parts Beulaville, North Carolina
Huett Braxton	Advisor (By Correspondence)	O'Neil Chrysler Plymouth Raleigh, North Carolina
Victor Finocchi	Advisor (By Correspondence)	Autry Chrysler-Plymouth, Inc. Fayetteville, North Carolina
Irving Wright	Advisor (By Correspondence)	Patrick Ford Fayetteville, North Carolina
Marvin Dazey	Automotive Teacher	James Kenan High School Warsaw, North Carolina
Richard A. Fry	Automotive Instructor	James Sprunt Technical Institute Kenansville, North Carolina
Donald Grady	Automotive Teacher	East Duplin High School Beulaville, North Carolina

APPENDIX D

DUPLIN AREA AUTOMOTIVE ADVISORY AND PROGRAM COMMITTEE

(CONT.)

Jerry Grady	Automotive Teacher	Wallace-Rose Hill High School Teachey, North Carolina
Bill Lewis	Automotive Teacher	North Duplin High School Calypso, North Carolina

BLOCK OR DIVISION NUMBER: 4.0 TITLE: Braking System Maintenance and Repair (cont'd.)

TASK NUMBER: 4.09 TITLE: Repair or Replace Wheel Cylinder.

INSTRUCTIONAL OBJECTIVE - 4.09: How to Repair or Replace Wheel Cylinder.

SKILLS: (Process Objectives)

4.091 - How to make visual check on wheel cylinders.
4.092 - How to use wheel cylinder rebuild equipment.
4.093 - How to repair and replace wheel cylinders.

RELATED TECHNICAL INFORMATION:

Identify parts.
See Manufacturers Specifications.

Required Instructional Time: 4.09, 4 hours.

Required Performance Standards:

4.091 - Time considered reasonable by instructor, detects leaks.
4.092 - Time considered proper by instructor. Uses brake hone and correct tolerance gauge properly.
4.093 - Flat rate + 20%. Uses proper equipment in proper sequence.

BLOCK OR DIVISION NUMBER: 4.0 TITLE: Braking System Maintenance and Repair (cont'd.)

TASK NUMBER: 4.10 TITLE: Repair or Replace Master Cylinder.

INSTRUCTIONAL OBJECTIVE - 4.10: How to Repair or Replace Master Cylinder.

SKILLS: (Process Objectives)

4.101 - How to repair and replace brake master cylinder.
4.102 - How to make visual check on master cylinder.
4.103 - How to use master cylinder equipment.

RELATED TECHNICAL INFORMATION:

Identify parts.
See Manufacturers Specifications.

Required Instructional Time: 4.10, 4 hours.

Required Performance Standards:

4.101 - Uses proper cylinder hone. Uses correct tolerance gauge properly. No leaks. Checks brakes for proper operation.
4.102 - Detects leaks. Time considered reasonable by instructor.
4.103 - Uses cylinder hone and correct tolerance properly. Time limits: reasonable by instructor.

Purpose of Instructional Objectives Guides

Articulated instructional objectives guides are expected to serve the following purposes:

1. Serve as the primary vehicle for the articulation of subject matter in like occupational programs between the high schools and the community colleges/technical institutes, through use by instructors at both levels as a reference in preparing instruction.

2. Provide a listing of the minimum tasks that a worker is expected to perform in the conduct of a specific level job in the occupation of concern.

3. Identify the primary detailed instructional objectives which are based upon the task listing. The tasks are listed in the sequence of complexity, with the least complex tasks being listed first, except where a task must be performed as a prerequisite to performance of another.

4. Identify the skills (process objectives) and related technical information which must be taught and learned to accomplish the instructional objective. These represent the minimum skills and related information required for adequate occupational proficiency in task performance.

5. Designate the instructional contact hours considered necessary to conduct the required instruction. This is an estimate by the instructors of the advisory and program committee as to the time required to teach the average learner to perform the task. This time estimate is based upon the assumption that the instructor will have available the essential equipment, facilities and instructional aids required to conduct the instruction, with the class size limited to the number of students shown on the equipment list.

6. Identify the performance standards to be met for occupational proficiency in the task. Performance standards used are those considered to be minimum business or industry standards. The ability to meet the listed standards of performance will also be considered as qualification for advanced instruction in that occupational program.

7. Provide a guide in the conduct of sequential occupational competency instruction by duties or blocks, resulting in qualification by the learner to perform limited skill specialist jobs of progressively higher skills until the program objective is reached, ie: file clerk to executive secretary; brake technician to automotive mechanic, etc. As the learner becomes proficient in the performance of tasks in successive more complex blocks, more marketable competencies are gained may be identifiable as the lower level job qualifications of a specialist. This provides an opportunity for even the slow student to eventually gain sufficient skills to perform adequately as a specialist at some level in the occupation, despite the lack of ability to complete the program.

The same holds true for the learner who has progressed satisfactorily through "several" initial blocks of occupational instruction (depending upon the program) and then for some valid reason is unable to complete the program or must leave school. Standardized sequences of instructional block presentation also ensure that lateral articulation can be practiced between the high schools of a local area and simplifies vertical articulation of subject matter with the local post-secondary institution.

8. Provide a listing of equipment required to conduct the program of instruction. Equipment listed is that considered to be the type and quantity essential for the conduct of instruction leading to job qualification in the occupation, with the class limited to the size stated. In some cases, expensive items of equipment, that have limited use, can be shared between schools, if adequate transportation and scheduling support is provided by the county school office. In some instances, it may be possible to delay teaching of several tasks involving special equipment and then arrange to take the class to the location of such equipment for instruction.

9. Provide a list of standardized performance test items to be used in the determination of occupational proficiency. The test items listed cannot be easily compromised, as long as the specifics are not provided, and could be used as study guides.

10. It is recognized that there may be unlisted tasks that some employers may require the worker to do in the occupation, when in their employment. The tasks listed are the <u>minimum requirements</u> for qualification for the job under average circumstances on a regional basis. The tasks are not limited to a specific area employment situation or employer. Instructors may teach more skills and related technical information than is shown in the guides. Such information should be limited to the students who have completed the requirements for the tasks concerned in the instructional objectives guide. Normally the change of tasks to those in the guide should be based upon local committee agreed area requirements and be taught by all schools teaching the block of instruction.

11. Updating and correction of items in the instructional objectives guides--teachers/instructors are encourage to view the instructional objectives critically in an effort to ensure that the contents are valid and current with business and industry requirements. Recommendations for change or correction should be submitted to the executive secretary of the committee, who should then assemble and present them to the advisory and program committee as a whole, for review and possible adoption.

12. Instructional Blocks (Duties)--Under normal circumstances, the teacher/instructor should not plan to conduct instruction in a given articulated block of instruction unless the capability exists to conduct all of the instruction to meet the instructional objectives, with the result that the successful learner is occupationally qualified to perform the tasks identified with the block. This of course means that in most cases the high schools will lack the capability to conduct a <u>full program</u> of

instruction conducted by the CC/TI owing to lack of class time, instructional resources or instructor time. The overall philosophy to be applied in occupational programs is that it is better to ensure that the learner is fully qualified to perform all of the tasks in a limited group of blocks or modules in an occupation and may be qualify at a lower job level, rather than to be only familiar with a large number of duty areas and tasks, but qualified to perform none of them. If higher level job qualification is sought, enrollment at the CC/TI is appropriate.

13. Most occupational programs will contain certain basic blocks of instruction without which a student would not be considered occupationally qualified at any level. Such blocks are normally identified as blocks 0.0 to 1.0 and on occasions blocks 2.0 and 2.5. These blocks usually are base blocks and should be taught early in the program sequence.

14. The instructional objectives guide is also designed to provide the information required to help ensure that the vocational student from high school who enrolls for advanced instruction in the same program at the CC/TI level will receive appropriate credit for articulated occupational course work successfully completed at the secondary education level.

POLICIES AND PROCEDURES
FOR
LOCAL AREA OCCUPATIONAL QUALIFICATION EVALUATION

1. Purpose - To determine if students satisfactorily completing two or more blocks of vocational/occupational program instruction during the past school year can meet the business/industry standards of performance for job qualification, using the Occupational Advisory and Program Committee developed standardized test items in the program instructional objectives guides. This evaluation also determines transferability of secondary occupational course work for CC/TI credit.

2. Who - Persons to be evaluated for job performance proficiency will be those high school students in articulated vocational programs who show occupational proficiency (passing, 77% or better) and have indicated interest in employment in the program occupation on leaving high school, or intend to enter advanced occupational instruction at the CC/TI level. A cross-section sample of program post-secondary students who are completing or have completed during the year those occupational courses common to the high schools should also be evaluated. (See Item 8.) CC/TI student participation is a quality control feature. Priority for evaluation of high school students should be given to those who are leaving high school by virtue of graduation or other valid reasons. The end of the high school year (May) will be the date for the normal evaluation of high school vocational students. High school students can be occupationally evaluated once a year, for instruction not previously evaluated, until all occupational course requirements have been met, or when the student leaves school. However, there can be exceptions made for such courses as typing and shorthand which are offered in 2-year blocks and can be adequately tested when the student is ready to leave school or has completed the second year of the instruction.

3. Evaluation for Occupational Qualification (Advanced Instruction) should consist of three phases or components:

   a. By the Vocational/Occupational Teacher/Instructor Evaluation - This part of the evaluation is based upon demonstrated general proficiency in class, attendance, attitude, reliability, work motivation and cooperation with the teacher and fellow students in task performance. Any teacher made test grades should also be considered in this phase of the evaluation. This score is normally combined with item 3(b) for a course grade.

   b. Task Performance Proficiency Evaluation at Home School - This phase is primarily the evaluation of the recognized occupational tasks in a block of instruction, using standardized test items and applying the performance standards. This evaluation will be performed by the teacher/instructor concerned. This is in recognition of the fact that it will be impossible to evaluate a student's occupational qualification fully at a central testing facility in the time that may be made available for such a purpose. This phase of the

evaluation can be continuous throughout the period as the instruction is conducted on the instructional objective concerned. The course or semester grade is normally a combination of 3(a) and 3(b).

c. Joint Occupational Qualification Evaluation Conducted at a Centralized Testing Facility, Using Standardized Test Items and Performance Standards - This phase to be conducted at a central testing facility, by a joint evaluation team consisting of at least two occupational teachers/instructors (one high school teacher and one CC/TI instructor) for each articulation project program of instruction. The purpose of this phase is to cause the student to demonstrate to an impartial testing team that he/she is occupationally qualified to perform the tasks organic to blocks of instruction completed and to be certified accordingly. The performance evaluation will apply randomly selected test items from the standardized test items, within the limits of the instruction completed by the student, unless it is a "challenge" type evaluation. Test items will concentrate on primary tasks and where a complex task is involved, which required considerable completion time, the test may require performance of only a portion of the task. Oral and written responses to certain test items may also be considered, particularly where related technical information is concerned, or identification of certain components of an assembly or an inspection is required. (See Joint Phase Enclosure 1.) (Appendix G-1)

d. The final occupational qualification for each block of instruction of the individual being evaluated may be determined by a total of the three evaluation phases weighted as follows:

1) Teacher/Instructor Evaluation (Home School) from 3(a), plus

2) Teacher/Instructor Administered Task Performance Evaluation (Home School) from 3(b), as final grade 60%

3) Comprehensive and/or Applied Performance Centralized Testing Evaluation by Joint Test Team. 40%

100%

This evaluation series is designed to validate job qualification and is not intended as a substitute for semester or quarter grades. Semester or quarter grades should, however, contribute to the teacher/instructor's evaluation phase. The student must achieve a combined score of 80% or better to be considered occupationally qualified in any one block or course of instruction.

4. Central Occupational Evaluation Facility - This facility should be centrally located to the institutions using it and have the best facilities and required equipment available to conduct the evaluation. (In most cases, this may be the local CC/TI. Selection of the CC/TI resources for this purpose would enhance articulation since it would further expose the high school students to the post-secondary institutions resources.)

5. Joint Occupational Evaluation Team - This team should consist of at least one high school teacher and one CC/TI instructor for the occupational program concerned. Where the size of the group being evaluated is large, or the test items require several test administrators, more than one high school teacher will be required. This team will set up and administer the test. The test items used will be those selected by the instructors of the area occupational program committee and should be representative of the major tasks of a block of instruction. The percentage value (based upon importance) of test items with relation to other test items in the evaluation should also be determined by the committee concerned. Student performance on each test item should be evaluated on the basis of "qualified" or "unqualified" to perform the task(s) concerned and meeting instructional guide performance standards stated in percentages.

6. Centralized Occupational Evaluation Administration Time - The centralized occupational evaluation should be conducted in blocks of 3 or 4 hours (AM or PM) on as many days as determined by the instructors concerned. Provision should be made for students to be excused from other school activities during their evaluation. These evaluations should be considered as important to the occupational student as the S.A.T. is to the college aspirant.

7. Certification of Job Level of Occupational Qualification - The student who achieves a final combined score of 80% or better, in each of the instructional blocks that collectively make up a recognized job will be issued a Local Area Certificate of Occupational Qualification, on leaving school. This certificate will state in standard industry/business/profession or D.O.T. recognized terms and titles the job level of performance successfully demonstrated by the student. The certificate of occupational qualification should be signed by the teacher and instructor(s) administering the test at the centralized testing facility and the home school occupational teacher. It will be authenticated for the Occupational Advisory and Program Committee concerned by the Executive Secretary of the committee. It is also desirable to issue all students who have been evaluated a list of the tasks completed for which performance standards have been met. (See Proposed Certificate of Occupational Qualification, Appendix H.)

   A record should be kept of students centrally evaluated who successfully have met required qualification standards for only one or more blocks of instruction but did not meet evaluation requirements for enough blocks (or were not tested) for qualification for a recognized job. Such students should receive credit for those blocks if enrolled at a CC/TI in the program. For students remaining in high school, such credits should be applied with work recognized the following year in determining job qualifications. All credits awarded should be made a matter of record at the CC/TI with that information also provided to high schools concerned (see Appendix H-1) and to the students. Those students who do not receive a certificate of job qualification but did earn transfer credits, should be given a letter that states credits earned. (See Appendix H-2.)

8. Testing of CC/TI Students - In view of the conflicts between spring quarter and spring semester completion dates and the difficulties that may be experienced in obtaining CC/TI student participation in centralized testing, it may be appropriate to evaluate the CC/TI students in those courses with subject matter common to the high schools during the conduct of regular instruction. The evaluation to include use of the same committee prepared test items and test procedures as will be or were used to evaluate the high school students during centralized testing. The results from the responses to those test items should be recorded and provided to the Executive Secretary of the Local Area Occupational Program and Advisory Committee concerned for use in preparing quality control statistics.

OCCUPATIONAL EVALUATION POLICIES, PROCEDURES AND RESPONSIBILITIES PLANNING MODEL

Joint Centralized Evaluation Phase

1. Establish date, time and place for each articulated program centralized evaluation.

   Responsibility: Assistant Superintendent for Vocational Education Local Area Public School System(s) (or equivalent).

   Dean of Instruction (or equivalent); local area CC/TI.

2. Designate teachers/instructors to participate.

   a. Minimum: 1 high school occupational teacher and 1 CC/TI instructor.

   b. Student to teacher/instructor ratio: 8 to 1 (may vary with Block Tested).

   Responsibility: High Schools - Assistant Superintendent for Vocational Education, Local Area Public School System(s), designates school(s) to provide teachers; school administrator designates individual(s).

   CC/TI - Dean of Instruction or other appropriate supervisor concerned with program to be evaluated.

3. Designate students to participate in the evaluation - (Limited to high school students with employment interests in occupation of the program or plan for advanced instruction and at least a cross-section of CC/TI students in common courses.) In both cases, the student to be evaluated must be eligible for evaluation based upon provisions of Appendix G.

   Responsibility: Teachers/instructors in program concerned, based upon information received through local school administrator or Department Head from Assistant Superintendent for Vocational Education, Assistant Dean of Instruction or Director of Vocational Education, or like supervisors.

4. Provide list of students to be evaluated and instructional blocks completed to evaluation team.

   Responsibility: Assistant Superintendent(s) for Vocational Education and Dean of Instruction (or equivalent) assisted by executive secretaries of the local area advisory and program committees concerned.

5. Preparation of Evaluation Plan Specifics to include:

   a. Selection of test items, from standardized listing;

   b. Provision of test item details to include item time allocation;

   c. Determination of equipment and facility requirements;

   d. Determination of test item sequence and method of evaluation (oral, written, identification and performance); and

   e. Determination of evaluation detail procedures (individual responsibilities of test administrators).

   Responsibility: Teachers(s) and instructor(s) designated to form program evaluation team.

6. Arrange for transportation of students to central evaluation facility.

   Responsibility: School administrator concerned, coordinated by Assistant Superintendent for Vocational Education Local Area Public School System(s) and CC/TI Dean of Instruction or designated person.

7. Suggested student evaluation load per evaluation period:

   a. Automotive - 15

   b. Business Education - 24

   c. Drafting - 15.

8. Provide the teacher evaluation of occupational qualification of students being evaluated at central testing facility to test evaluation team. (See Basic Guide Policies and Procedures for Local Area Occupational Qualification Evaluation - paragraph pertaining to occupational evaluation, Appendix G.)

   Responsibility: Individual teachers/instructors concerned through local school administrator in time for evaluation. (This should be submitted with student's name, if possible.)

9. Exercise general supervision and coordination of centralized evaluation team and centralized testing phase.

   Responsibility: Executive Secretary of the Local Area Program and Advisory Committee concerned with the occupational program in which students being tested are enrolled.

10. Arrange for equipment and test facility availability and preparation based upon requirements determined by centralized testing team in paragraph 5 above.

Responsibility: Occupational education supervisor exercising supervision over facility designated, the occupational teacher/instructor normally charged with the facility and equipment. Preparation of facility to be performed by test team personnel, assisted by facility instructor if not part of test team, coordinated by Executive Secretary of Advisory and Program Committee concerned.

11. A Suggested Procedure to Determine Student Test Item Assignment - Vocational/occupational teachers/instructors will prepare sufficient test items to test students in the time allocated, on each block of instruction completed since last tested. If not previously tested, those blocks of instruction completed during the school year will be tested. Test items should be designed to be completed in relatively short periods. (Multiples of 10 minutes are recommended.) To reduce the chance for compromise and to permit station-type testing to expedite testing, test items for each block should be numbered and grouped according to allocated completion time. Slips of paper with test item number and sequence of testing for that item will then be placed in containers and the student directed to draw the appropriate number of slips from the various block groups. The numbers drawn will then be the test items to which the student responds and sequence of response.

12. Test Items for Centralized Testing - The planning committee for the centralized testing phase should be made up of necessary representatives from each participating institution in the program concerned. The committee as a group should select the test items outlines from the appropriate blocks of the instructional objectives guide per paragraph 11 above. The joint evaluation test items should then be prepared by the committee. Each item should be reviewed by the committee for validity and reliability. Following preparation of test items, they should be given to the executive secretary of their advisory and program committee for review, necessary reproduction and safekeeping until test day(s).

13. Grading of Test Results and Calculation of Qualification Scores - Following each day's testing, test team personnel should grade test items administered. If possible, qualification scores should be calculated at this time based upon Paragraph 3, Appendix G. Results should be given to the committee's Executive Secretary.

14. Preparation of Occupational Qualification Certificates - Responsibility of the committee's Executive Secretary. (See Paragraph 7, Appendix G.)

RATIONALE FOR CENTRALIZED EVALUATION
FOR
JOB QUALIFICATION

Centralized evaluation for occupational program students for job qualification and advanced program credit is appropriate as an element of the articulation process. With the support and efforts of all concerned, the following benefits can result from centralized evaluation:

1. The student is evaluated by competency based test items simply for ability to meet job qualification standards in occupational work completed and is not in competition with other students.

2. Evaluation is based upon student ability to respond to standardized test items that relate to key job tasks and are selected from test items in the program instructional objectives guide. Test items are designed to meet both applicatory and cognitive task requirements. Performance standards are those recognized by the occupation for the job task concerned.

3. The centralized evaluation test items are prepared for administration, reviewed for adequacy, and responses graded by the joint efforts of vocational/occupational teachers/instructors of the articulated program concerned. The results should be better test items and test administration than normally can be done by one individual. The foregoing also helps to validate acceptance of evaluation results by the post-secondary occupational instructors, when a student presents high school earned job qualifications for advanced standing credit in a post-secondary program.

4. By demonstrating job qualification through centralized testing, high school students simultaneously demonstrate their qualification to receive advanced program credit for same, without further testing, if they enroll in the program at the post-secondary level - the purpose of articulation.

5. Centralized testing helps to determine if all vocational teachers and occupational instructors are following the instructional objectives guide for their program in the same block of instruction. That practice ensures that the same tasks are taught and the same performance standards applied - again, articulation.

6. Centralized testing provides the opportunity to award the successful student with a standard, area recognized, joint certificate of occupational qualification which states the job qualification(s) demonstrated by the student in terms having personnel management significance. The certificate is issued by the occupational advisory and program committee conducting the evaluation. Since this is a joint educational area activity with advisor participation, it should have more credibility than the average institutional diploma or certificate.

APPENDIX G- 2

7. Provides a valid basis for administrators to evaluate the quality of occupational instruction as well as student ability in articulated programs presented in the institution(s) for which they have administrative responsibility. This is a demonstration of accountability. It also helps to ensure that adequate resources are provided to support the program.

8. Properly conducted, centralized evaluation can serve as a workshop for all involved to improve testing procedures.

Do not confuse centralized job qualification evaluation with course grades and credits awarded the student by home school classroom teachers. Centralized testing is annual and normally involves all courses or blocks of instruction completed by the student during the year, or all blocks of instruction in which not previously evaluated by centralized action. It is not intended as a substitute for final examinations. The home school teacher could use some appropriate elements of centralized testing results, if such was planned, as contributing to final grades for the spring semester or quarter when there is a question of passing or failing a course. The designation of "job qualified" in a specific block of instruction is the result of a composite score that is based upon two independent evaluations. The first evaluation is that performed by the home school occupational teacher during the conduct of daily instruction in the block evaluated. The second evaluation is the result of the centralized testing conducted by a joint-test team of secondary and post-secondary teachers.

APPENDIX H

Certificate of Job Qualification

THIS IS TO CERTIFY THAT

June Hanchey,

Has satisfactorily completed Blocks 1.0, 2.0, 2.5, 4.0 and 5.0 (See reverse side) articulated blocks of instruction in the Business Education program conducted at Wallace-Rose Hill High School, and has met performance standards required for qualification as a: File Clerk, Clerk-Typist, Clerk-General.

OFFICIAL:

Date: May 12, 1977

For The Duplin Area Business Education Advisory and Program Committee

By: Thomas Hall
Committee Executive Secretary
Assistant Dean of Instruction
James Sprunt Institute

SEAL
JAMES SPRUNT INSTITUTE

Home School Teacher(s):

Laura C. Kenan
Wallace-Rose Hill High School

Evaluation Team Members:

Laura C. Kenan
Wallace-Rose Hill High School

Catherine Register
James Sprunt Institute

Herman Kight
James Sprunt Institute

SEAL
DUPLIN COUNTY SCHOOLS

Hanchey, June
Wallace-Rose Hill High School
May 1977

Credit without further testing in the appropriate Business Education programs will be given at James Sprunt Institute, Kenansville, North Carolina for the instructional blocks and course numbers listed below, if enrolled during the school year 1977-1978 or the school year following completion of the Business Education program at the secondary level.

Block 1.0	Personal Development	HYG 101	Q - 96
Block 2.0	Basic Typing	BUS 102,103	
Block 2.5	Filing	BUS 112	Q - 98
Block 4.0	Business Machines (Reproduction)	BUS 212	Q - 95
Block 5.0	Advanced Typing	BUS 104,205	Q - 95

Q - Qualification Score

ARTICULATION ORIENTATIONS PRESENTED

BY THE PROJECT DIRECTOR

1974-1978

Institutions and Activities Involved	Number of Times	Location
James Sprunt Institute and Duplin County Schools	2	Kenansville, NC
Duplin County Board of Education	1	Kenansville, NC
Board of Trustees, James Sprunt Institute	1	Kenansville, NC
Rotary Club, Duplin County	1	Warsaw, NC
J.P. Rose High School	2	Greenville, NC
Sampson Technical Institute	1	Clinton, NC
Wayne Community College - Wayne County Schools and Goldsboro City Schools	3	Goldsboro, NC
Martin Community College and Martin County Schools	3	Williamston, NC
Haywood Technical Institute and Haywood County Schools	1	Clyde, NC
Fayetteville Technical Institute - Cumberland County Schools and Fayetteville County Schools	3	Fayetteville, NC
Pitt Technical Institute and Green County Schools	1	Greenville, NC
Wilkes Community College and Wilkes County Schools	1	Wilkesboro, NC
Randolph Technical Institute - Randolph County Schools and Asheboro City Schools	1	Asheboro, NC
Piedmont Technical Institute and Person County Schools	2	Roxboro, NC
Wilson Technical Institute and Wilson County Schools	1	Kenansville, NC
Mayland Technical Institute - Mitchell County Schools, Avery County Schools and Yancey County Schools	3	Spruce Pine, NC

Institutions and Activities Involved (Cont.)	Number of Times	Location
Robeson Technical Institute - Robeson County Schools, Fairmont City Schools, Lumberton City Schools, Maxton City Schools, Red Springs City Schools and Saint Pauls City Schools	1	Lumberton, NC
Beaufort County Technical Institute and Washington County Schools	2	Plymouth, NC
Western Piedmont Community College	1	Morganton, NC
Richmond Technical Institute - Richmond County Schools and Scotland County Schools	1	Hamlet, NC
American Association Community and Junior Colleges Conference (State Community Colleges Presidents) - 1977		Denver, COLO
North Carolina Occupational Research Unit Dissemination Conferences - 1975-76-77		Raleigh, NC Greensboro, NC
Occupational Research Unit Project Directors' Conferences - 1975-76		Raleigh, NC
State Advisory Council on Vocational Education - 1975		Raleigh, NC
State Advisory Council on Vocational Education - 1978		Southern Pines, NC
American Association Community and Junior Colleges/American Vocational Association (National Conference Articulation of Occupational Programs) - 1978		Washington, DC
Eastern Deans Association, Department of Community Colleges - 1976		Williamston, NC
Wake Area Health Occupations Teachers, Wake Memorial Hospital		Raleigh, NC
Department of Community Colleges 20-year Planning Committee		Raleigh, NC

ARTICULATION RESEARCH PROJECT
INSTRUCTIONAL AND PROCEDURAL GUIDES
DUPLIN AREA

PHASE I

AUTOMOTIVE MECHANICS INSTRUCTIONAL OBJECTIVES GUIDE
AUGUST 1975

ACCOUNTING/BUSINESS EDUCATION INSTRUCTIONAL OBJECTIVES GUIDE
APRIL 1976

BUSINESS ADMINISTRATION/BUSINESS EDUCATION INSTRUCTIONAL OBJECTIVES GUIDE
APRIL 1976

DRAFTING (BUILDING TRADES - MECHANICAL) INSTRUCTIONAL OBJECTIVES GUIDE
MAY 1977

EXECUTIVE SECRETARY/STENOGRAPHER INSTRUCTIONAL OBJECTIVES GUIDE
JULY 1975

POLICIES AND PROCEDURES GUIDE FOR THE ARTICULATION OF OCCUPATIONAL EDUCATION PROGRAMS BETWEEN THE PUBLIC SECONDARY SCHOOLS AND SCHOOL SYSTEMS AND THE TECHNICAL INSTITUTES/COMMUNITY COLLEGES OF NORTH CAROLINA
JULY 1976

(The above were prepared and published as separate publications.)

APPENDIX J

ARTICULATION PARTICIPANTS

As of 30 June 1978

CC/TI AND PUBLIC SCHOOL SYSTEM(S)	PROGRAM(S) ARTICULATED
Beaufort County Technical Institute and Washington County Schools	Executive Secretary/ Business Education
Fayetteville Technical Institute, Cumberland County Schools and Fayetteville City Schools	Automotive Mechanics Drafting Executive Secretary/ Business Education
James Sprunt Technical Institute and Duplin County Schools	Automotive Mechanics Executive Secretary/ Business Education
Martin Community College, Martin County Schools and Washington County Schools	Executive Secretary/ Business Education
Mayland Technical Institute, Mitchell County Schools, Avery County Schools and Yancey County Schools	Executive Secretary/ Business Education
Piedmont Technical Institute and Person County Schools	Automotive Mechanics Executive Secretary/ Business Education
Sampson Technical Institute and Duplin County Schools	Drafting
Wayne Community College, Wayne County Schools and Goldsboro City Schools	Automotive Mechanics Drafting Executive Secretary/ Business Education

APPENDIX K

ARTICULATION RESEARCH PROJECT
INSTRUCTIONAL AND PROCEDURAL GUIDES

STATE PILOT MODELS

PHASE II

AUTOMOTIVE MECHANICS INSTRUCTIONAL OBJECTIVES GUIDE (A PILOT MODEL)
AUGUST 1977

DRAFTING (GRAPHIC COMMUNICATIONS) INSTRUCTIONAL OBJECTIVES GUIDE (A PILOT MODEL) - JULY 1978

PART I - BASIC, OCTOBER 1977 (REVISED JULY 1978)

PART II - ARCHITECTURAL DRAFTING AND DESIGN
JULY 1978
MECHANICAL DRAFTING AND DESIGN
JULY 1978

EXECUTIVE SECRETARY/STENOGRAPHER/BUSINESS EDUCATION INSTRUCTIONAL OBJECTIVES GUIDE (A PILOT MODEL), AUGUST 1977

POLICIES AND PROCEDURES GUIDE FOR THE ARTICULATION OF VOCATIONAL/OCCUPATIONAL EDUCATION PROGRAMS BETWEEN NORTH CAROLINA PUBLIC HIGH SCHOOLS AND COMMUNITY COLLEGES/TECHNICAL INSTITUTES (STATE PILOT MODEL), JULY 1978

(The above were prepared and published as separate publications.)

APPENDIX L

The Wallace Enterprise

A DUPLIN COUNTY INSTITUTION

Wallace, North Carolina 28466 Monday, December 12, 1977

JSI Grants Advanced Credit

APPENDIX M

STUDENTS RECEIVE ADVANCED CREDIT AT JAMES SPRUNT INSTITUTE FOR OCCUPATIONAL COURSE WORK COMPLETED IN THE DUPLIN COUNTY HIGH SCHOOLS

Last April selected Business Education students from the Duplin County High Schools participated in an occupational proficiency evaluation conducted at a central testing facility established at James Sprunt Institute for that purpose. The evaluation determined the student's ability to meet job performance standards in the job tasks related to the business courses of instruction completed in the Duplin County High Schools.

The testing portion of the evaluation was conducted by joint-test teams of high school and James Sprunt business teachers. This evaluation program was part of the Articulation Research Project that was started in Duplin County in 1974 to align certain high school occupational programs with like or related programs of James Sprunt Institute. The project is supported jointly by the State Department of Public Instruction and the State Department of Community Colleges. The primary purpose of articulation or program alignment is to ensure that high school occupational program students who choose to obtain advanced instruction in their program at the community college or technical institute level are not required to repeat occupational instruction successfully completed in high school.

Students who met job task performance standards in enough courses during central testing and had earned an 80 percent or better grade from their home school teacher in the same courses so as to be classified as job qualified at some level, were issued a Certificate of Job Qualification by the Duplin Area Business Education Advisory and Program Committee. This certificate states that the holder is qualified to perform at a certain recognized job level and had listed on the reverse side those courses conducted at James Sprunt Institute for which the student would be given credit if enrolled in the same occupational program at that institution. Those students who successfully completed central testing in too few subject areas to determine job qualification were not awarded a certificate, but were placed on record for advanced credit at James Sprunt Institute in that course if they enrolled there at a later date.

During the current fall quarter at James Sprunt Institute, twenty-one recent high school graduates who had participated in the central job proficiency testing last spring are enrolled in Business Education programs at James Sprunt Institute. These students received credit towards advanced program requirements for one to eight courses, based upon the credits awarded by certificate following last spring's testing. No further testing was required of these students for these courses. Over half of these students received credit for three or more courses in their program at James Sprunt.

Seven students of the twenty-one stood out from the rest because of the large number of courses for which they were given credit based upon their performance during centralized testing last spring.

First of the seven was Karen Whaley from James Kenan High School who met job task performance standards in eight different courses of instruction. Following enrollment at James Sprunt, Karen also challenged, was tested and received credit for three typing courses. As a result Karen had credit for eleven courses or forty quarter hours out of 112 hours required for graduation at the start of her first quarter of enrollment in the Associate Degree Program for Executive Secretary. It will be possible for Karen to get her degree in four quarters which ideally can be done in one year.

Barbara Alderidge and Sharon Whaley, also from James Kenan High School, received advanced credit for six courses based upon their central testing performance and then proceeded to challenge and pass the testing for three courses in typing following enrollment, giving them a total of 32 hours each towards graduation.

The fourth student is June Hanchey from Wallace-Rose Hill High School who received 24 credit hours for seven courses during the centralized testing program.

John T. Tyndall from East Duplin High School was job qualified in six courses and awarded 24 credit hours at James Sprunt Institute.

Edna L. Aycock, the winner of the 1977 Dixon S. Hall Scholarship, and Avis Baker, both of North Duplin High School, were also job qualified in six courses, to include four typing courses and received 24 credit hours each.

The advanced credits awarded the students named will result in major savings to the individual from the standpoint of time, effort, money, as well as being more employable sooner, when they completed their program at James Sprunt Insittute. They will also have received the benefit of the experience, maturity and identification gained at the post-secondary level of education, plus the classification as an Executive Secretary with an Associate Degree. This is an example of how the high schools of Duplin County and James Sprunt Institute are working together to provide local area students with more and better job skills, without duplication of effort. Such cooperation benefits not only the students concerned, but the community as a whole.

ARTICULATION INHIBITORS

The following listed items represent some of the recurrent problems that have been experienced in different areas during the life of the project. On occasions, they have served to inhibit or degrade articulation in varying degrees. They do not pertain to any one institution or locality. These items may become obstacles to articulation which must be considered and overcome if it is to be successfully achieved:

1. CC/TI schedule rigidity which makes the advanced credit student appear not to fit in the program upon initial enrollment.

2. Concerns of CC/TI instructors (often valid) regarding adequacy, depth, emphasis and quality of high school instruction in some program areas.

3. Packaging problems between CC/TI and high school occupational courses which currently use different state directed course titles, course numbers, instructional objectives and instructional time allocations. The articulated instructional objectives guides attempt to compensate for this problem.

4. Inadequate foundation course completion in high school for CC/TI technical programs which require mathematics and science courses for which the student is not prepared.

5. Reluctance of some high school vocational education supervisors to recognize deviations from state vocational program guidance that may be necessary if high school vocational teachers are to factually achieve common course articulation with the local area CC/TI. The deviations are normally instructional content with more depth and emphasis than the high schools require and are needed to meet occupational task requirements for job qualification as a technician.

6. Reluctance of supervisors and teachers/instructors to make the extra effort to work with counterparts outside of their institution.

7. Reluctance of CC/TI instructors to adjust occupational course content, sequence and performance standards to a state standard to achieve articulation with the high schools.

8. Insufficient follow-up by supervisors to assist teachers/instructors to accomplish articulation actions as well as to ensure that agreements have been implemented and instructional objectives guides have been used in instructional planning, to ensure that instructional content and task performance standards are congruent in common courses.

9. Scheduling priorities in high school which preclude the student from taking necessary vocational courses which would permit the student to complete the full high school vocational program and move smoothly into advanced instruction at the CC/TI level.

10. A tendency of some CC/TI instructors to base their course and program content on personal opinion and experience rather than area employer/industry requirements. This posture inhibits greatly standardization of instructional objectives, course content and performance standards necessary for articulation. (This problem also surfaces in the high school.)

11. The fear that any standardization will result in loss of program flexibility to meet local area needs.

12. A tendency of some high school vocational programs to emphasize the more glamorous activity areas in an occupation while providing inadequate basic vocational related technical information and instruction necessary to be fully qualified to perform the tasks in the duty area. This complicates student qualification to receive credit for the course and ability to engage in advanced instruction successfully.

13. CC/TI concerns that Full-Time Equivalent (FTE) student attendance credit will be lost by granting course credits for high school work which reduces the attendance time required of a student in the institution to complete a given program.